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BRAIN ABSCESS AS THE OTOLOGIST'S PROBLEM*

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The greatest problem in the successful management of a brain abscess is in the diagnosis of the lesion. If the medical profession is to make any satisfactory progress in the management of the disease, the physician must first determine why a patient suffering from a brain abscess so frequently goes unrecognized until it is too late for surgical intervention.

Bagley¹ has aptly said that the fear of the presence of a brain abscess frequently prevents the physician from facing the unpleasant situation until the appearance of grave symptoms. In one way, a brain abscess offers the physician more than any other pathologic lesion because he knows that it is always fatal if not operated on. There is no organ in the human body that can conceal its trouble so carefully as a brain which harbors an abscess. Nor is there a pathologic lesion that explodes with such sudden and fatal results.

Eagleton² has compared a patient with a brain abscess to a hibernating animal, in that the patient has a subnormal temperature, tachycardia, slowed respiration with diminished output of carbon dioxide, lowered blood pressure, relative peristaltic inactivity, and a reduced insensibility to painful and emotional stimulus. It is no wonder that the otologist so frequently fails in the early recognition of the vague, yet important, symptoms. He diagnoses disturbances elsewhere in the body by deformity, inflammation, pain, fever and impairment of function. All of these may be so slightly disturbed by a brain abscess as to pass unrecognized. I believe he has been led to overrate the value of neurologic observations in the early diagnosis of brain abscess and has neglected the most important aid—the history.

Neurologic anatomy is so complicated that, by his absence of knowledge of the subject, the otologist excuses his own lack of skill in the recognition and diagnosis of neuropathologic lesions. This defense is unfair when one considers the large proportion of brain abscesses that do not show particularly in their early course, any positive neurologic signs.

Lund³ states that "the chief reason of the high mortality rate is that, of all the otogenic complications

the brain abscess most frequently escapes being recognized in due time."

Korner⁴ first established the fact by a large series of necropsies that in more than 85 per cent the brain abscess was adjacent to the original focus of infection. Von Bergmann,⁵ as early as 1888, determined that a primary focus was always necessary in the formation of a brain abscess. Available statistics show that over 50 per cent of all brain abscesses are otogenous, and, of this number, about 80 per cent arise as a complication of chronic mastoid disease. Lund³ has shown in a series of fifty-four cases, which were completely studied, that more than half of them were secondary to cholesteatoma.

From the foregoing remarks it is quite obvious that brain abscess is, in the beginning at least, an important otologic problem and ranks along with meningitis and sinus thrombophlebitis as one of the three major complications of otitic disease. Since any of these diseases may exist as a complication of the other, it seems to me that the management of brain abscess is just as much the responsibility of the aural surgeon as is the sigmoid thrombophlebitis or the otitic meningitis. Also the brain abscess, which is most amenable to treatment, is the one that lies in close proximity to the affected mastoid. Certainly the approach to the otogenic brain abscess falls within the field of the otologist, and the drainage of the abscess is usually a minor part of the operation.

Dandy⁶ has brought out the importance of the value of a minimum of surgery and slow drainage of the abscess. A rubber catheter is used, which is removed in from forty-eight to sixty hours. There is no irritation and no finger exploration. The brain tissue is not removed, and there is only a nick in the dura to permit the entrance of the drain.

PATHOGENESIS OF BRAIN ABSCESS

The exact development of this lesion is not accurately known. Experimentally, it is very difficult to produce. The clinical observations, which are confirmed by operation and by necropsy studies, have not afforded a large enough series to determine all the different stages in the development of this disease. It is known, however, that the time of development may vary from a few days to several weeks and that a patient may harbor a brain abscess for as long as sixty-four years. The average duration is four and one-half weeks and should be considered the maximum time limit for handling this disease.

The stages of development may be divided into four parts—the initial, latent, manifest and terminal. These

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¹ Bagley, Charles Jr. Brain Abscess. Clinical and Operative Data. J. M. A. 81, 2161-2166 (Dec. 29) 1923.

² Eagleton, W. P. Intracranial Complications of Aural and Nasal Origin. Arch. Otolaryng. 2, 60-84 (July) 1923.

³ Lund, Robert. Diagnosis and Differential Diagnosis of Otogenous Brain Abscess. Acta oto-laryng. 11.

⁴ Korner. Diagnosis and Differential Diagnosis of Otogenous Brain Abscess. Acta oto-laryng. 11.

⁵ Von Bergmann. Diagnosis and Differential Diagnosis of Otogenous Brain Abscess. Acta oto-laryng. 11.

⁶ Dandy, W. E. Treatment of Chronic Brain Abscess by Tapping. J. A. M. A. 87, 1477-1478 (Oct. 30) 1926.

may all vary and they frequently overlap. The patient is usually diagnosed in the manifest or terminal stage, at which time he has two classes of symptoms: general or systemic, and local or brain symptoms. Under general is a marked lethargy, sallow complexion, slow respiration, loss of appetite, constipation and subnormal fluctuations of temperature of about 2 degrees. The most characteristic finding in the history of a patient with a brain abscess is the negative stage; he has no complaints except one—headache—which falls under general brain symptoms, and unless he is in a late or terminal stage, headache is the most constant and important symptom. The headache that a patient with a brain abscess complains of is unlike any other type of headache, except possibly that of brain tumor. It is unrelieved by any form of medication; it is constant,

Cytologic examination of the spinal fluid gives various results with the different stages of the abscess. The chief diagnostic aid in the study of the spinal fluid is whether the patient has a sterile or a septic meningitis. The pressure readings of the spinal fluid, and the reaction of the patient following these lumbar taps is, in some cases, of striking importance. It should be borne in mind that, in every patient with a brain abscess, the primary stage is closely associated with a diffuse meningitis, particularly in abscesses of otogenous origin and may at the onset present such a confusing picture as to make a differential diagnosis impossible (case 3).

ILLUSTRATIVE CLINICAL CASES

CASE 1—One interesting case of a brain abscess has recently come under my observation which not only explains one of the ways in which an abscess may form but also its duration. A man, aged 30, was admitted to the hospital with his first attack of mastoiditis. During the mastoidectomy the surgeon curetted some tissue which he thought was thick pus. This was sent to the laboratory, and the pathologist pronounced it brain tissue. The patient developed severe headaches, with a rise in temperature to 103 F. Five weeks later the necropsy revealed a fully developed brain abscess at the site of curettement. The abscess had ruptured, producing a diffuse meningitis. This is the only case of brain abscess coming under my observation in which the exact time of the onset could be precisely determined.

CASE 2—Miss M. T., aged 21, was admitted to the Isolation Hospital, March 3, 1924, with measles. Four days later she developed a supra-orbital swelling. There was a profuse straw

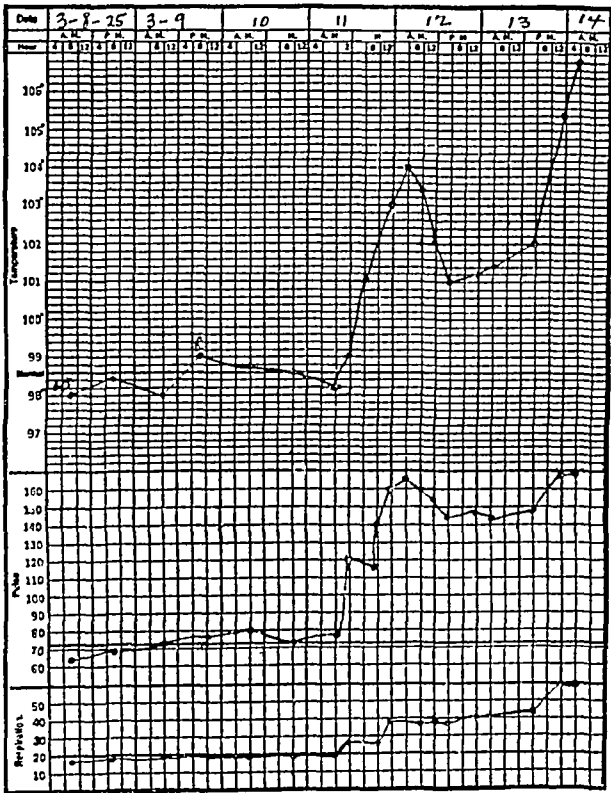


Fig 1 (case 4)—Pulse and temperature showing rise following rupture of the brain abscess

it gets progressively worse, and, were it not for the lethargic state into which the patient rapidly sinks, it would no doubt be the means of rescuing him from his disastrous condition more frequently than any other symptom. Other general brain symptoms which are usually present are vertigo, sudden vomiting, slow cerebration, bradycardia, photophobia and, last and of most infrequent occurrence, optic neuritis.

Since this paper does not deal with the localization of the brain abscess, that part will not be considered. However, cranial nerve lesions do play an important diagnostic part, and particularly is this true in lesions of the third, sixth and seventh cranial nerves of uncertain etiology.

SEROLOGY

The patient with a brain abscess usually has about 12,000 leukocytes and a moderate decrease in the red blood cells and hemoglobin, as the disease progresses

TABLE 1—Location of Abscess

	Not Diag- nosed	Diagnosed, Not Evacuated	Diagnosed and Evacuated	Total
Cerebellar			8	8
Abscess of left temporal lobe			2	2
Abscess of right temporal lobe		1	3	4
Multiple abscesses		1		1
Subdural abscesses		2	1	3
Unstated	1	2	4	7
Total	1	6	18	25

colored, watery discharge from both nares and she complained of a slight frontal headache. The following day this condition resembled erysipelas, but her general condition improved; her temperature subsided and she had less headache. Five days later the swelling became localized and when incised over the inner canthus an ounce of thick yellow pus was drained off. The wound healed promptly.

Without warning, her left ear discharged at this time. She had no symptoms of mastoiditis. Apparently this was a very mild type of ear infection as the discharge rapidly diminished and the patient made no complaint relative to the ear. In fact, she made no complaint about any of her illness, insisting that she had no headache and no pain. She was quite listless but answered questions in a normal manner and seemed to resent any examination or disturbance. Her general condition seemed to be improving. Her temperature was never above normal, she lost no weight, ate well and slept well. However, she did have some unusual symptoms. She frequently had urinary incontinence and at one time the nurse noticed that she removed the packing from her supra-orbital wound and reinserted it with her nail file. She swore at the nurses and was quite vulgar in her conversation. I reprimanded her severely about this, but she was not disturbed and apparently took no offense.

April 1, nearly a month after her admission, in making the rounds I noticed that she was standing at a window on the second floor laughing and joking with friends on the outside of the hospital. She apparently was in good condition and I did not examine her.

The following day she became quite listless and paid no attention to her surroundings. This condition gradually became worse, she seemed to fall into a natural sleep and had a shuffling,

slow respiration and a regular full pulse of 50. She refused food and water.

I suddenly realized that I was dealing with an intracranial disturbance, but owing to the fact that she had a septic focus in her left ear and also one in her left frontal sinus, and with no localizing signs, it was difficult to determine which area of her brain to explore. Neurologic consultation was no help. Remembering that the left frontal sinus was involved first, I decided to expose the left frontal lobe.

The frontal sinus showed evidence of long standing infection and an abscess containing about 2 ounces (60 cc) of thick white pus, under considerable pressure, was opened in the left frontal lobe of the brain. Immediately the respiration and pulse became faster and stronger and the following morning she ate a hearty breakfast and carried on a particularly jovial conversation. She remembered little of her stay in the hospital and nothing at all of the preceding five days.

She had a paralysis of her sixth cranial nerve which promptly cleared up and she made an uneventful recovery. There was a moderate bilateral choked disk which was discovered only the day prior to operation.

It is difficult to understand how a patient with such extensive brain involvement could have passed unrecognized while constantly under one's observation. Three weeks elapsed from her first definite symptoms of brain abscess until she was operated on. This period corresponds exactly with that experienced by Bagley,¹ who was also at a loss to explain such dangerous delays. I repeatedly insisted on a more complete history in this case, but the interns were unable to obtain it because the patient had no relatives in the city.

Patients do not suddenly develop urinary incontinence without cause, and the peculiar mental state which aroused my early attention should have brought forth a closer study of this patient. Her serious and almost fatal preoperative condition shows how hazardous it is to wait for definite localizing signs prior to operation. Such a procedure usually offers the pathologist an opportunity to make the intracranial observations at autopsy.

CASE 3—Sept 27, 1927, J. G., a painter, aged 29, was admitted to the Isolation Hospital with a diagnosis of otitic meningitis. He had a draining right ear which had been present for twenty years, since an attack of measles, but this ear had caused him no particular trouble until the night of September 22, when it felt full. He went to a doctor and had it washed out. Four days later he was unable to reach the doctor's office on account of a chill followed by high fever, a severe bursting headache, projectile vomiting, delirium and weakness.

On admission, his temperature was 104.6 F. The white blood cell count was 12,600, 85 per cent hemoglobin, a normal urine and 15,500 cells in his spinal fluid, which were mostly polymorphonuclear. A smear of this spinal fluid showed, when stained, a mixed flora of bacteria with staphylococci and streptococci predominating. There was slight tenderness over the mastoid process but no swelling or redness. From the canal a small amount of foul smelling pus was exuding. The ear drum was gone. I concurred in my interns' diagnosis of otitic meningitis and advised the patient's relatives that nothing could be done for such a condition and that he would die.

Immediately following the spinal puncture the patient began to improve. His headache disappeared, he talked rationally and he ate his food without help, but he had no appetite and appeared very dull mentally. His fever subsided, and four days later another spinal puncture yielded much to our surprise, only 150 cells with marked decrease in pressure and no organisms. After twenty-four hours there was no growth of bacteria from the cultures, and I suddenly awakened to the fact that I was dealing with a brain abscess of otitic origin.

The following morning a radical mastoidectomy was performed on the right ear, the dura of the middle fossa was covered with old dense granulations, through which yellow globules of pus were oozing. When the dura was incised, about

2 ounces (60 cc) of yellow, foul smelling pus oozed forth. The patient rapidly improved while on the operating table. A catheter was inserted as a drain, and that afternoon the patient smoked a cigaret and wanted to know how the world series baseball games had come out. The patient made a complete recovery and has been well since.

It was rather by accident that this patient was operated on for brain abscess. Had not the second lumbar puncture been done and the patient showed such striking symptoms of brain abscess, I would have accepted the otitic meningitis as a hopeless condition.

I recall, with regret, similar patients who have come under my observation and on whom I was satisfied to accept the diagnosis of otitic meningitis as a fatal terminal event. Perhaps none of them might have made the spectacular response to surgical intervention that this patient did, but they were entitled to more careful and optimistic consideration. The only way that I can understand this patient's recovery, after streptococci were demonstrated in the spinal fluid is that he

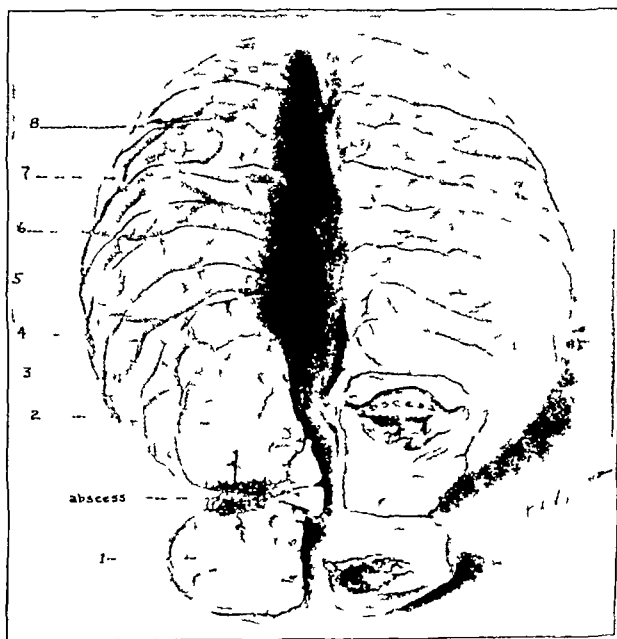


Fig. 2 (case 4)—Appearance of brain after fixation showing the bilateral abscesses.

developed a systemic immunity to the infection as well as a local walling off of the abscess.

This unusual spinal fluid finding with recovery is similar to case 4, except that the latter patient, after having recovered from his meningitis, developed multiple brain abscesses which were not drained.

CASE 4—Jan 25 1925, a man, aged 40 was brought to St. Luke's Hospital with the following history:

Nov. 2, 1924, while working as a carpenter, a scaffold collapsed and the patient fell about 12 feet. He landed in the debris on his buttocks and was momentarily unconscious. He felt no discomfort at the time, and helped remove his partner, who appeared to be more seriously injured.

On the advice of his foreman he went home, and that night his wife noticed that he bled from his left ear. The following day he had quite a profuse epistaxis, which was uncommon for him. He felt well enough to work the following day but was advised by his family not to do so. Two days later he drove his car 70 miles and for the first time complained of a severe frontal headache. Two days after that he took quite an extensive motor trip to a neighboring state and was gone six days.

On his return his relatives noticed that he was much slower in his movements and did not answer questions promptly. He tried to chop wood but was too weak.

His condition remained about the same for a month, when he developed a right earache. The drum was incised, producing a purulent discharge and relief of pain. One week after this he became semiconscious and had several severe vomiting attacks. This was followed two days later (December 17) by convulsions, with head and eyes turned to the left, and his head drawn back. His temperature varied at this time between 102 and 106 F. During the first twenty hours he had fifty-two convulsions. A lumbar puncture revealed a cloudy spinal fluid with normal pressure and no demonstrable organisms either by smear or by culture. A cell count was not made.

His family physician quite naturally diagnosed a nonepidemic meningitis, but much to the physician's surprise, within three days he seemed to improve. The convulsions stopped, and although he was semidelirious and had intermittent attacks of projectile vomiting, the elevation of temperature subsided and he began to eat and regain some of his strength. His pulse rate did not go above 48.

At this time (Jan 25, 1925) he was brought to the hospital. He was in a fair state of nutrition and appeared uninterested in his surroundings. He did not look very sick. His response to questions was slow and it was difficult to get his cooperation in the examination. He apparently had some impairment in his hearing. In his right ear was a dried purulent discharge, and the left drum was normal. There was no evidence of injury about his head. The pupils were round, regular and equal, and reacted normally. There was a moderate increase in the swelling of the optic nerve heads, more marked on the left side. The tongue was moist and protruded normally. The pulse rate was 46 and regular, hemoglobin was 85 per cent, white blood cells, 12,400, red blood cells, 4,700,000.

The blood Wassermann reaction was negative.

February 3, after observing him for one week without noting any change in his symptoms, I decided to go in through the frontal sinus and explore the silent area of the brain, selecting this site partly on account of the suggestive roentgenographic observations, but principally because an abscess in this portion of the brain could explain the negative localizing signs.

After opening into a normal frontal sinus without evidence of fracture, I removed the inner table and uncovered an arachnoid, which expanded with each inspiration. The dura was incised and a large lumbar puncture needle was inserted. A small amount of caseous material was removed, but no frank pus. A soft rubber drain was inserted $1\frac{1}{2}$ inches. There was practically no drainage through the tube. It was removed on the fifth day. The wound healed without infection.

One week later the brain was again explored for an abscess. The frontal wound was reopened. A trephine opening was made over the right temporofrontal region and the right mastoid opened, exposing the dura of the middle fossa. From these openings the brain was explored thoroughly in every direction, both with a needle and with a thin narrow spatula. No pus was found and the patient was returned to his room. He made no improvement and died ten days later (fig 1).

Necropsy revealed multiple abscesses involving both anterior hemispheres of the brain (figs 2 and 3). The right abscess had

ruptured into the right ventricle, producing a diffuse meningitis. There was no evidence of any primary focus or skull fracture. The mastoid was normal.

It is pathetic to fail in localizing a brain abscess when one feels so certain that an abscess is present. The autopsy observations made the effort seem all the more futile.

This case brings out two interesting points: first, the enormous amount of brain involvement with a total absence of localizing symptoms; second, the difficulty of locating a brain abscess at operation.

CASE 5—Jan 13, 1930, a boy, aged 8 years, was admitted to my service for a mastoidectomy. Following an attack of measles at the age of $2\frac{1}{2}$ years, he had had severe pain in his right ear. The ear did not drain and caused him no further trouble until Dec 7, 1929. Following a severe head cold at this time he had severe pain for about ten days and a temperature of 104 F; he was delirious and had urinary incontinence and disorientation. He was dizzy and was unable to walk alone, he complained bitterly of frontal headache, talked incoherently, and was unable to recognize his mother. At times he was unconscious, and he complained of being short of breath. He said that his head felt big.

December 24 I incised the ear drum. There was a profuse discharge of pus under pressure and he promptly improved. He attended school for two days and returned home with a temperature of 101 F, with severe pain over his right eye, and earache. His mental disturbances returned. He had difficulty in walking and insisted that the roof was falling in on him. At this time, a mastoidectomy was performed.

There was an area of dura in the middle fossa one-half by one-fourth inch wide exposed which was markedly inflamed. The overlying bone bled freely. The mastoid cells were filled with purulent debris and, at the time, I thought that this dural irritation might account for some of his symptoms. The headache persisted however, requiring frequent hypodermics of one-half grain (0.03 Gm) of codeine to control it. Five days following the mastoidectomy he had what his mother described

as a "fit." He had a marked photophobia and a diplopia, and was unable to differentiate various objects in the room. He was extremely dizzy, had loss of appetite, vomited frequently and had a rotary nystagmus counterclockwise; there were 15,000 leukocytes. The eyegrounds were normal and there was a moderate weakness of the right external rectus muscle.

Six days following the mastoidectomy, his brain in the region of the middle fossa was explored, but no abscess was located. A rubber catheter drain was inserted and I contemplated a later exploration of the cerebellum. Three days later there was a sudden discharge of pus through the drainage tube, and the patient promptly was much better. Within four days the drainage had all stopped, the patient seemed normal in every way, and he was dismissed one week later.

This patient again illustrates the relation of the chronic ear infection to brain abscess, the rather obscure early symptoms, the more or less accidental

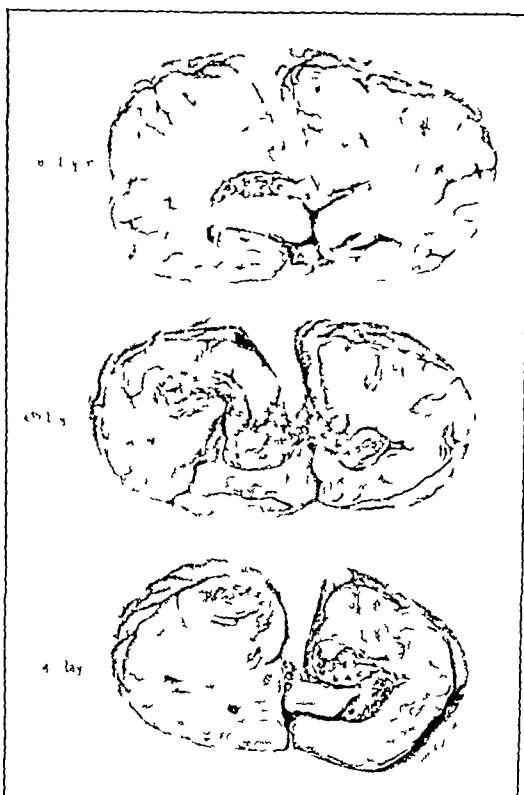


Fig 3 (case 4)—Cross sections of brain through the fourth, sixth, and eighth layers showing the extensive abscess formation and rupture into the ventricles.

drainage of the abscess, and the advisability of waiting between brain operations in the hope that the abscess may reach the drum

CASE 6—G E, a girl, aged 11 years, was brought to Mercy Hospital on account of severe headache and inability to walk without falling forward Five years before she had had a severe earache, following an attack of influenza, at which time her ear did not drain, but the mastoid process became swollen, red and tender, and the mother was advised to have the child's mastoid process operated on

This swelling gradually subsided, and she had no more ear trouble until Christmas, 1926, two months prior to the hospital admission Following a cold, she had a severe left earache, and, for the first time, the ear started to drain This gave her only temporary relief, however, as she developed a severe frontal headache which was continuous and kept her awake nights Gradually this subsided Three weeks later, while returning from school, she was drenched in a rain storm Following this she had a hard chill with a high fever, projectile vomiting and a return of her headache The ear continued to drain but did not cause pain

On admission to the hospital she was only semiconscious She fell forward when she attempted to walk, and had a marked photophobia, the pupils were widely dilated, and it was difficult to arouse her She groaned continuously and would scream out occasionally and beg to be relieved of the pain over her eyes

Her diagnosis was so obvious that the admitting nurse told me I had a patient with a brain abscess in my service With the typical ear history the location was not difficult to surmise

A simple mastoidectomy was promptly done The cortex was thick and hard and prevented external drainage The entire mastoid process was filled with a pulsating abscess under distinct pressure The floor of this abscess was the dura covering the sigmoid and was covered with dense, fibrous tissue indicative of an old process So much pus was found, and the patient improved so promptly when the abscess was drained, that I thought it probable that I was dealing entirely with an extradural abscess

The child made all the characteristic postoperative brain abscess improvements, except one she still had her severe frontal headache I was called out of the city for twenty four hours, and, when I returned I found my patient in exactly the same condition as on admission

She was returned to the operating room, and a small abscess was drained directly beneath the lower third of the sigmoid About 2 drachms (8 cc) of light yellow pus was found There was no improvement, and further search for another abscess was continued until the patient's condition became so grave that it was thought inadvisable to continue In desperation a rubber catheter was dropped into the cerebellum through a small incision in the dura of the posterior fossa The mastoid wound was lightly packed, and the child was returned to her room in about the same condition as that in which she had left it

That night her condition became so serious that oxygen was administered The respiration slowed to 6 a minute She could not be aroused Imagine my surprise when I found her the next morning eating breakfast with a ravenous appetite entirely unaware of her recent experience!

The night nurse said that about midnight she noticed that the mastoid dressings were saturated with pus and that the patient suddenly began to breathe more normally that the pulse increased in volume and rate and that when the patient awakened at 6 30 a m she asked for food Her headache had also disappeared

When I changed the dressings about the ear I noticed that a large amount of foul smelling pus had completely saturated all the gauze and had drained out on the pillow From the catheter which I had inserted into the cerebellum thick, greenish yellow pus was oozing forth This was aspirated, and the abscess was gently irrigated with Asch's solution without moving the tube A considerable amount of pus was washed out

Except for a paralysis of the external rectus muscle of the left eye, the patient was normal in every way and continued to make rapid progress On the sixth day after the operation

while I was irrigating the abscess for the last time (since the washings were clear) the patient suddenly screamed, "Oh, my head" and, grasping the top of her head with her hands, fell backward on the pillow and was apparently unconscious

I did not attempt to arouse her but immediately wrote on her chart that I had killed my patient by rupturing the capsule of the brain abscess at a time when she had apparently recovered I had noticed that the fluid did not return promptly about the catheter on account of the narrowing of the fistula, and, although I was using a 30 cc syringe, I thought that I was not exerting enough pressure to cause harm

TABLE 2—Summary of Signs and Symptoms

<i>Age incidence</i>	
10-20 years	9
20-30 years	4
30-40 years	6
40-50 years	1
50-60 years	3
60-70 years	1
Correct age not given	1
<i>Sex</i>	
Male	15
Female	10
<i>Cholesteatomatous involvement</i>	
Cholesteatomas	4
<i>Resulting from trauma</i>	
Trauma	2
<i>Results</i>	
Recovered	6
Died	19
Autopsies	9
<i>Primary focus</i>	
Draining ears	14
Eyes	1
Infection of antrum from tooth	1
Influenza	1
Lungs	2
Osteomyelitis of hip	1
Sinus	3
Unstated	2
<i>General symptoms</i>	
All had headache	Earache
Choking	Epistaxis
Convulsions	Holding of head to side
Delirium	Instability
Difficulty in swallowing	Motor symptoms
Diplopia	Numbness
Disorientation	Paralysis
Dizziness	Rigidity of neck
Draining ears	Slowness in response
Drowsiness	Vertigo
<i>Forms of headache</i>	
Frontal	15
Frontal and occipital	1
Frontal and parietal	2
General	4
Occipital	2
Unstated as to type	1
<i>Forms of paralysis</i>	
Facial	5
Facial and side	5
Side	4
Partial	1
None	10

After returning to the office I was so depressed and worried that I did not care to see patients with minor ills, so I returned to the hospital There she was sitting up in bed cutting out paper dolls, and in spite of all my questions and suggestions she would not admit that there was anything wrong Her convalescence has proved that she was correct, and her left eye has regained its normal movements

An additional point of interest was the complete amnesia which she had from Christmas until her brain abscess was drained This was demonstrated by her own observation that she could remember nothing about a serial motion picture from Christmas on although she missed only one night

She has done so well in school that a grade has been skipped and her weight has increased 30 pounds (14 Kg)

This case illustrates the danger of postoperative interference in brain abscess Irrigations are unnecessary and there is danger of rupturing the abscess wall

and producing a diffuse meningitis. The favorable result here might be classed as an accident, but it demonstrates the advisability of inserting a blind drain, even though no abscess has been reached.

SUMMARY

During a recent visit to some of the Eastern hospitals, I was struck by the indifferent attitude of the otologist to the patient with a brain abscess. Once the lesion was diagnosed, the patient was promptly transferred to the neurologic service, where he was not seen again by the otologist. It was my impression that the brain abscess patient was shifted and transferred as much as possible from one service to the other because of the attitude expressed by the attending intern at one hospital in the words "I heartily approve of transferring these patients as all of our patients who develop brain abscess die anyhow."

It is, I believe, the fatalistic attitude toward this lesion which is so destructive to any progress in the proper management. One also frequently hears of the recurrence of this lesion and of the mental impairment which these patients afterward suffer. From experience with my own patients, and in reading of others, I am convinced that the patients who have completely recovered from a brain abscess suffer no more impairment after the operation or recurrence than patients who have had an appendectomy. One has only to see such skilful surgeons as Cushing and Dandy operating on the brain for the removal of tumors to realize how much may be done to this organ without disturbance of function.

After all, it does not matter so much who performs the surgery on the brain abscess, as the fact that it must be recognized early enough to afford an opportunity for proper surgical procedure. Failing, as it does so frequently, within the field of the otologist, it behooves him to be familiar with the clinical course of this lesion and to realize how frequently brain abscess exists as a complication of ear infection.

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ABSTRACT OF DISCUSSION

DR R. BISHOP CANFIELD, Ann Arbor, Mich. In our last series of forty-two cases at the University of Michigan Hospital, otitic suppuration was by far the most important single factor, being important in 38 per cent of the total number. The question occasionally arises as to whether in a given case of otogenous brain abscess it is better to eradicate the suppurative otitis media and then to attack the brain abscess or to reverse the procedure. In this connection it must be borne in mind that a previously active but apparently healed otitis media is of but slightly less clinical importance than a suppurative otitis media, active at the time of observation. While I agree with Dr. Dixon that failure to recognize the presence of the abscess at the earliest possible moment is regrettable, I feel that careful consideration must be given to the selection of the most favorable time for operation. I am by no means of the opinion that the operation should always be made as soon as the presence of the abscess is recognized. While it is fatal to delay intervention until a leptomeningitis has been established, it is unwise to intervene during the acute stage, during which the condition is essentially a progressive acute encephalitis. Intervention at this time is likely to bring about an extension of the encephalitis and to set up a leptomeningitis. It seems wiser to wait within reason for the attempt on the part of nature to form a limiting membrane around the focus of infection. The chief problem that the otologist faces is whether he shall approach the abscess from the mastoid or through the neighboring part of the skull. This question should be decided at

the operating table and in accordance with the conditions found in each individual case, three important points being borne in mind: 1. Opening the brain from the infected mastoid cavity may establish a meningitis when no definite track of infection can be demonstrated. 2. Abscesses lying deeply beneath the cortex must be made superficial before successful drainage can be maintained. 3. The abscess that can be drained most successfully is the one that is reached by a path extending at right angles to the skull. In general I agree heartily with the precepts laid down by Dr. Dixon.

DR FRANCIS V. GOWEN, Philadelphia. Barany stated that at the beginning of the war the Germans and Austrians lost most of their brain abscess cases as the result of packing the abscess cavities with gauze. This gauze, instead of aiding in the removal of the pus, merely became saturated and acted as a cork, preventing efficient drainage, and in addition caused it to burrow back along the course of the nerve fibers, thus causing dissemination of the pus and eventuating in a generalized encephalitis. When they changed to the other method they reversed the figures and most of the patients were saved. The newer treatment consisted in making a wide incision into the abscess cavity, gently irrigating the pus contents from the lowermost depths, separating the lips of the wound widely and using head mirror reflected light so the operator knew when he reached the bottom of the wound. After complete examination the lips of the wound were kept apart with glass or non-corrosive metals or steatophil paper, and the patient's head placed in favorable position for the continuous flow of drainage. This treatment was given two or three times a day. The fact that it is important to see to the bottom of the abscess cavity necessitates the use of a head mirror, and since a head mirror is an unwieldy object except in the hands of one accustomed to its use, one might conclude that otitic brain abscesses are best handled by the trained otologist.

DR E. LEE MILES, St. Louis. I have had only about eleven cases. I am not counting extradural and subdural abscesses, in which I believe most operators get good results. As I remember, the only patient that got well was a child that had a Bezold abscess. There was terrific swelling, and as soon as the cortex of the mastoid was uncovered a cavity was entered that was so deep that I did not dare do anything. I have seen this child grow up. I cannot say I am satisfied with the result because the child is not normal mentally. I do not know what she would have been if she had not the mastoid condition. The other children are well poised mentally. Of cerebral abscesses I have had about ten, and every patient died. One case was a multiple brain abscess, in which there was cerebral and also cerebellar abscess. I have recently had a case which has disheartened me. A child in less than a week after I had removed the adenoids started to have a fever but no chills. I did a jugular sinus ligation on the right side, and a short time afterward the child had more fever and I opened the lateral sinus on the other side. I had the characteristic swelling of the optic disk, and in four or five days the child developed a nystagmus to the right and a meningeal cry. This child gave me trouble for three or four months, but finally she got out of bed, with this terrific swelling of the optic disk, and went back to school and seemed to be normal. A year afterward the child seemed perfectly normal except occasionally for a little nystagmus. Three or four weeks prior to that time the mother called my attention to the fact that the child had slight headaches. I put her through tests and could not find a cerebellar syndrome, and sent her to a neurologist and he said that the baby was perfectly normal. This child was brought back later with explosive vomiting, but two celebrated neurologic surgeons could not find what the trouble was. I turned the patient over to a general surgeon and he found a right cerebellar abscess. In three months the child developed meningitis. In other words, the child lived fourteen months after the first mastoid operation was done.

DR J. B. PORTS, Omaha. I have to differ with the author as to the neurologist. After having worked with one for a considerable time I feel that he is the best adviser I have. He does not hesitate to advise operation and he does recognize

brain abscesses of otitic and sinus origin. If one must have a consultant who is not used to ear, nose and throat work, I agree with the author that he can be a hindrance rather than a help. In regard to quoting statistics from foreign clinics, I think one has to be a little careful because there is a larger population to the physician than in this country, and more neglected ears than are found in the general practice of the otologist in the United States. I want to commend the author's approach to the abscess. I told this point over with the neurologist I work with at home, and with a neurologic surgeon, and they both agreed that in all cases of brain abscess the best results were obtained when the abscess was opened with the least trauma to the brain. In other words, if a small opening is made into the dura and the abscess is found at the first puncture, the drainage tube introduced without plunging around in the brain and without introducing a knife or needle two or three times, and the tube removed gradually, such cases do the best, so I would heartily commend the suggestion that the least possible trauma be done to the brain. I have no quarrel about the different types of drainage. I use a type similar to that the author mentioned, except that I remove the rubber tube fairly early and use in its place a silver wire loop. In regard to early drainage in talking with various men who have operated on brain abscesses I have found that all have observed that in the early cases in which the abscess was not walled off the danger of losing the patient was greater.

DR JOHN F. BARNHILL, Indianapolis. In typical cases of brain abscess, the diagnosis is often easy. In atypical cases, such ease may not be expected. The symptoms on which diagnosis is based, as outlined by Macewen many years ago, are applicable to the typical, uncomplicated case and are of little or no help in others. To depend on slow pulse, slow respiration and subnormal temperature in all cases will lead the surgeon widely astray in many instances, for, in addition to the abscess, the patient suffers from meningitis, either local or general, increased pulse rate, rapid respiration and elevated temperature are usually present even though the brain abscess is large. Macewen's list of symptoms is therefore no longer useful and others must be depended upon. The history of the case, the pathologic condition found in the ear at examination, the condition of the bone found on mastoid operation if operation has been performed, are all suggestive and helpful. Papillitis or papilledema will be found usually, but often only after repeated examination. It is a symptom of intracranial pressure and therefore does not occur until such pressure is considerable. My chief point is, the unreliability of Macewen's series of symptoms in atypical brain abscess.

DR HAROLD M. HAYS, New York. I should like Dr. Dixon's opinion about a certain type of case which is seen infrequently. I will illustrate by two typical examples. A number of years ago I operated on a youngster for a double mastoid condition. The recovery was more or less uneventful. At the end of three weeks she developed a high temperature and every symptom of meningitis. Spinal puncture showed fluid at a great pressure and very cloudy. The opisthotonos was so great that the head almost touched the heels. I returned her to the hospital again, a consultation was held and a diagnosis of acute meningitis was made. The prognosis seemed hopeless. However, I decided that it would do no harm to reopen the wounds and to uncover the dura. On the following day the child's temperature had dropped, she was conscious and sitting up in bed, and at the end of one week she went home entirely recovered. In the second case, a typical textbook operation on the mastoid was performed. On the fourth day the patient complained of excruciating pain in the middle ear. The temperature was 104 F and signs of meningeal irritation arose. Spinal puncture showed fluid under slight pressure and clear. Consultation was held and a hopeless prognosis given. Because of the recovery in the previous case, I decided to uncover the dura. This was done and the following day the temperature became normal and the child recovered. Recently I had a patient referred to me who had been operated on for mastoiditis by a competent man. When I saw the child a few weeks after operation, I found a healed wound but suspected

some complication. I referred her to the hospital, where she remained for almost a week with a normal temperature and seemed well enough to be discharged as cured. A week later she developed a sudden high temperature and every sign of meningitis. She was not under my care at this time, but on being called in consultation I advised uncapping the dura. However, this was not done and the child died. Whenever patients have complicating elevations of temperature and symptoms after acute mastoid operations there is a possible localized infection in the dura or an epidural abscess and frequently recovery will take place if the dura is uncapped.

DR O. JASON DIXON, Kansas City, Mo. Regarding Dr. Myers' patient I had a similar case which emphasizes the importance of looking over the nurse's record. The nurse often is describing a case of brain abscess, although she is unaware of the condition. Unbiased observations may be extremely valuable, and I always encourage the nurse to write down every detail, such as disorientation, vomiting, the patient's remarks, and what she thinks of the patient's progress. Of course, mistakes will always be made in the differential diagnosis of brain abscess, particularly in tumors and especially in tuberculous meningitis. I have recently explored the brains of three children with septic ears, who had tuberculous meningitis. That is one of the most confusing complications. A patient with a tumor case whom I had prepared for operation suddenly developed a high temperature and convulsions and died. I had diagnosed a brain abscess and thought that I had waited too long. At necropsy we found the tumor, so I was wrong on that. Neurologic consultation may be of great help, but one individual must accept the responsibility, and he should be the surgeon. If the responsibility is divided there will not be any action. Regarding the possibility of differentiating between acute and chronic brain abscess, that is really a difference in the pathologic changes. I am convinced that a higher percentage of good results in brain abscess would be obtained if the patient did not die of the meningitis which they all have during the early stage of development. Unfortunately, they do not all have just a pachymeningitis but a diffuse meningitis, and they die before the abscess has time to form. The abscess is really the end result and is not the primary part of the disease. I have had the same feeling as Dr. Barnhill about choked disk. I do not pay much attention to it. If I cannot see it, I let it go. Visual fields help if the patient is in a condition to cooperate. The case that Dr. Hays had I would interpret as pachymeningitis with irritation around the dura of the middle fossa. In practically every mastoidectomy with streptococcal infection I uncover the dura. I think that this is one stage of a brain abscess, but few go on beyond the pachymeningitis. It must constantly be borne in mind that patients with brain abscess may conduct themselves in a fairly normal manner.

Streptococci and Rheumatism.—To summarize the bacteriologic views of the moment, it would be correct to say that the close relationship of streptococcal infection and acute rheumatism is again receiving much wider recognition although the exact cause of the disease still remains in doubt. The protagonists of the streptococcal theory of rheumatism are roughly divided into two groups—those who believe in a specific streptococcus and those who imagine that various streptococci are capable of producing the disease. The organism, which has been isolated by most investigators from the blood and various lesions in rheumatic patients is a *Streptococcus viridans* although on several occasions hemolytic streptococci have been reported. In 1927, a separate effort was made by two different observers, Birkhaug and Small, to establish another distinct streptococcus as the cause of rheumatism. Small called his organism the *Streptococcus cardio-arthritis*, whilst Birkhaug not venturing on a name, designated his as a new type of non-methaemoglobin forming streptococcus. During the last few years almost as much work has been done to show that no single type of streptococcus is exclusively responsible for rheumatism as previously had been expended in proving the opposite.—PONTON F. J. and SCHLESINGER BERNARD. Recent Advances in the Study of Rheumatism, Philadelphia: P. Blakiston's Son and Co. Inc., 1931.

INTERTROCHANTERIC FRACTURE OF THE FEMUR*

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My purpose in this paper is to review 100 consecutive fractures of the femur occurring in adults and to describe in detail the method of management in intertrochanteric fractures which, in my experience, has given the best end-results

Intertrochanteric fracture, as the name implies, is that fracture in which the plane of bony separation extends from the greater trochanter downward and through the lesser trochanter. This fracture should not be considered as a fracture of the femoral neck and should not be included in the consideration of fractures

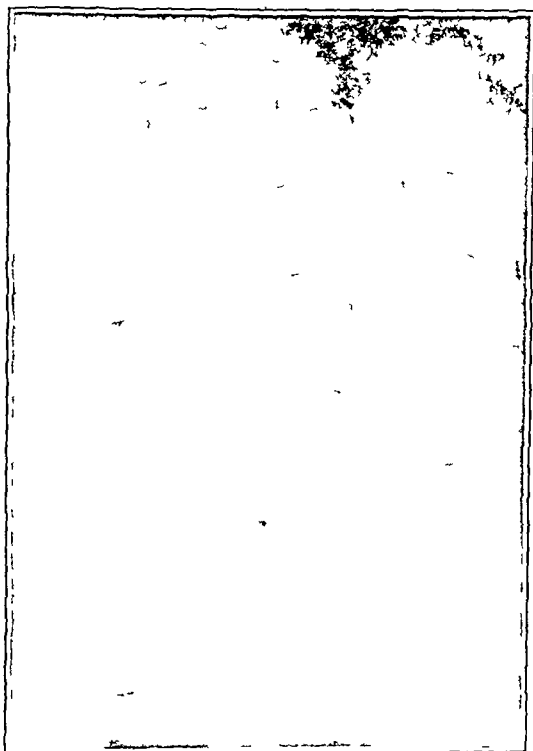


Fig. 1—Comminuted and impacted intertrochanteric fracture with separation of the lesser trochanter

of the neck of the femur. This is mentioned because in not a few papers and in the clinical demonstration of fracture of the femoral neck, intertrochanteric fracture is at times included. It might also be stated that in a review of roentgenograms, intertrochanteric fractures are classified as fractures of the neck of the femur in many instances.

The anatomic varieties of this fracture are fairly constant. Most of the fractures are comminuted and frequently impacted (fig 1). However, at times the fragments are separated and the hip angle is reduced from normal (which can be considered 130 degrees) to a right angle or less (fig 2). This produces varying degrees of shortening. Rotation of the distal shaft is infrequently seen. Intertrochanteric fractures are at

times accompanied by subtrochanteric fracture lines, running longitudinally into the shaft of the femur in the subtrochanteric region (fig 3). Comminuted lines of fracture running into the femoral neck from the intertrochanteric region are not seen (fig 4).

A compound fracture in this region is extremely rare, in fact, it is almost impossible for compounding to be produced, owing to the protection afforded this particular area.

A review of my experience with 100 consecutive cases of fracture of the femur in adults shows that 18 per cent of the femoral fractures were of the intertrochanteric variety. Other observers, such as Speed, state that 24 per cent of all fractures of the femur are intertrochanteric in location. The average age of the patients in my series who sustained this fracture is 58 years. In the series reported by Speed, the average age was 60. There is apparently a greater predominance of this type of fracture in men. It is practically unknown in childhood and rare in young adults, except after great violence.

It seems, therefore, that the predominance of this type of fracture in people past middle age is due to the amount of bone atrophy that is commonly present in the older patients. The age of the majority of the patients acquiring this fracture and the anatomic relationship in this location are predisposing factors in the rather high incidence of pathologic fractures due to metastatic carcinoma and bone cysts (figs 5 and 6).

COMPLICATIONS

Local complications involving the fracture itself are uncommon. Those frequently encountered are due to the general condition and age of the patient, such as varying degrees of shock, cardiovascular lesions and pneumonia of the hypostatic or bronchial type. Nonunion practically never occurs. This is an interesting observation and in all probability is due to the excellent circulation that occurs in the bone at this point, as all branches of the nutrient artery of the shaft terminate at about the intertrochanteric line. Just above this line, in the neck of the femur, the reverse situation anatomically is present in that the circulation is extremely poor and there is a very high incidence of nonunion in neck fractures.

The age of the individual seems to have little or nothing to do with the union, since elderly patients repair intertrochanteric fractures with the same rapidity and completeness as do the younger individuals. On the other hand, in fractures involving the neck of the femur, age is supposed to be the greatest factor in nonunion. This is rather difficult to believe since in patients of the same age union occurs so rapidly in intertrochanteric fractures, as compared with fractures of the neck. The period of time necessary for bony union to occur in intertrochanteric fracture of the femur in patients whose average age is 60 is from six to eight weeks.

The mechanism responsible for intertrochanteric fractures can be briefly stated as follows. The patient usually falls backward or to the side, striking the trochanteric region directly on the ground. To resist this fall he usually holds the thigh in abduction and external rotation by the contraction muscles attached to the greater trochanter. In this manner he receives a fracture extending from the greater trochanter downward and through the lesser trochanter, usually impacting the fragments of the trochanteric region into the cancellous bone of the distal shaft. Complete separation

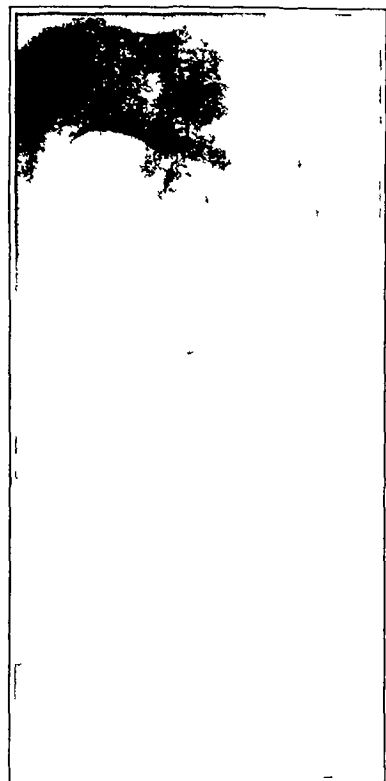
* Read before the Section on Orthopedic Surgery at the Eighty First Annual Session of the American Medical Association, Detroit, June 26, 1930.

* Owing to lack of space this article is abbreviated here by the omission of several illustrations. The complete article appears in the author's reprints.

of the fragments may occur with backward sliding of the shaft toward the brim of the acetabulum

DIAGNOSIS

The diagnosis of this type of fracture is in part made on the history of the patient's falling in the manner just described. Usually he is unable to walk on the injured extremity and the disability is more or less complete.



In some, but not all, patients, the limb is shortened but not to the extent that is encountered in fractures of the femoral shaft. The foot is usually not everted as is frequently noted in fractures of the neck of the femur or dislocation of the hip joint. The axis of the limb is not visibly out of alignment excepting in those complete fractures in which adduction is present, with a decrease in the hip angle. Crepitus is usually present except in those fractures which are impacted. This is due to the fact that a large percentage of the fractures are comminuted. Adduction and rotation, if attempted, are always painful.

The maximum point of tenderness is located over the greater trochanter, outside the femoral head and neck. The relationship of the upper border of the trochanter to Nelaton's line is not changed in most cases unless the trochanter is displaced well upward, which is not a frequent occurrence. I therefore believe that this sign, often stressed in the diagnosis of this fracture, is of little importance. Roentgenographic study of the region of the hip either confirms or refutes the diagnosis made on clinical observations.

TREATMENT

The treatment of the patient suffering with an intertrochanteric fracture may well be divided into two parts.

1 A careful survey of the general condition of the individual. This is of extreme importance in this instance because of the age of the patients. Shock, cardiovascular complications and pulmonary complications are not uncommon and may often be prevented by a familiarity with the general condition of the patient and by the institution of prophylactic treatment soon after the injury. Anesthesia in patients of this type is to be avoided whenever possible and treatment planned to give the shortest period of bed confinement and the least restriction of motion, particularly of the knee joint. Apparatus should be applied which will give comfort to the patient, permit him to assume the sitting

position and allow for early massage of the limb involved.

2 Treatment of the local condition. In my opinion the form of treatment which most nearly meets the foregoing indications is that of traction with suspension and abduction of the limb. This treatment is applied as a routine in all intertrochanteric fractures excepting the incomplete fractures without separation of fragments. In such instances the patients are simply kept in bed, perhaps with the limb supported with sandbags, for a period of three weeks. During this period heat in the form of infra-red rays and massage are applied daily. This procedure seems to diminish the pain at the site of the injury and to increase the resolution of swelling. Weight bearing is not allowed for from six to eight weeks after the injury and then only with the aid of crutches. The patient is permitted to walk without support at the end of three or four months. During this later period the massage is continued and active exercises, particularly abduction and rotation, are indulged in by the patient. Complete fractures usually present the following deformity for correction: 1 Shortening 2 Decrease in the hip angle 3 Adduction. It therefore follows that any form of treatment applied must be capable of completely correcting these anatomic conditions. This is accomplished by traction and countertraction in suspension, with the leg in abduction and with the knee and hip joints moderately flexed, the limb thus being in a position of neutral muscle pull.

Traction on a fully extended limb is to be condemned, as in most instances it will cause considerable difficulty

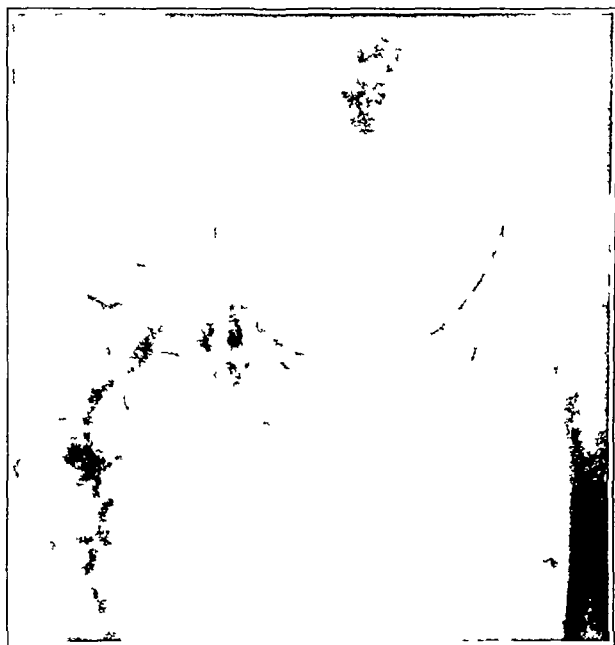


Fig 5—Metastatic carcinoma of the femur with spontaneous fracture (Carcinoma of breast)

with the knee joint and will not be nearly as effective in reducing the deformity as traction applied in the position of neutral muscle pull. Another method to be condemned is that in which so-called temporary splints are applied, causing delay in the reduction and permanent immobilization. Traction should be applied as soon after the injury as possible. The earlier it is applied the easier will be the reduction and the sooner

will pain be controlled, a factor of considerable importance in these elderly individuals in the treatment of any shock present and in the care of their general condition.

The apparatus applied is a wooden adjustable bed frame (fig 9). A Thomas ring splint with flexion knee piece is attached. The foot of the bed is elevated to prevent pressure on the perineum, the ring of the splint is bent to rather an egg shape to relieve any pressure in the trochanteric region which is apt to be present when the leg is swung into position of abduction.

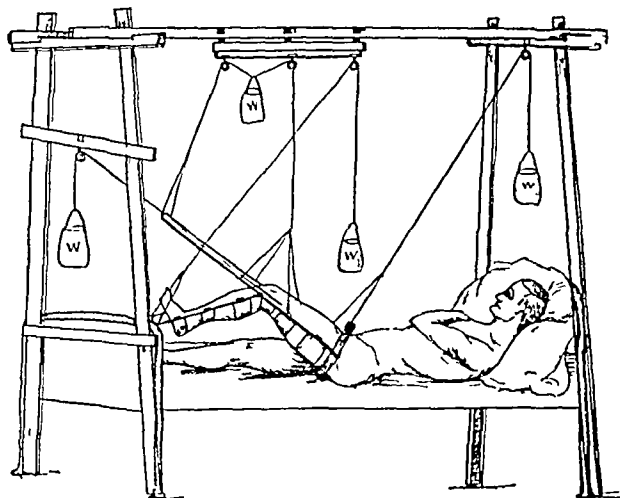


Fig 9—Traction apparatus showing splint and frame in place

Traction is important. In most patients the two plane type of traction, using adhesive plaster, is applied. This is applied with the knee and hip flexed and the foot kept at a right angle or in slight dorsal flexion. The amount of weight used in this type of traction is usually about 15 to 18 pounds in each plane of traction. Following this the patient is kept free from pain by the use of morphine and the weight is reduced as soon as the shortening is overcome. This is determined by simple measurement of the legs by means of steel tape. This method is far superior to the frequent measurement and gradual increasing of weight to obtain reduction or shortening.

Traction is applied without abduction at first until the shortening is overcome, as it is found that this is more rapidly overcome in the straight extended position than in the position of abduction. As soon as shortening is no longer present, the splint is swung out into as much abduction as possible.

A bedside roentgenogram is then taken and if difficulty is encountered in maintaining enough abduction to overcome the loss of the normal angle between the neck and the shaft, the opposite limb may be placed in the same position, or an adjustable pressure pad may be inserted over the greater trochanter, giving a fixed point on which to abduct the lower fragment.

In a few cases the shortening may be considerable and the hip angle much reduced. If this occurs in a young individual with heavy musculature of the thigh, ice-tong calipers should be applied rather than any type of adhesive plaster traction. Direct bone traction in this manner can be used with uniform success in all intertrochanteric fractures in which shortening is present, as the results are satisfactory. However, I do not feel that it is necessary except in a few selected cases.

The apparatus is left in place for periods varying from five to seven weeks and the patient allowed to move the knee joint after two weeks of immobilization.

Massage to the intertrochanteric region and muscles of the thigh, together with the application of heat, is of considerable value in producing comfort and in maintaining the best possible condition of the musculature.

Beside roentgen examination, together with clinical examination by manual attempts to move the trochanter in the anteroposterior plane and the amount of pain present on these attempted manipulations, are the guides in determining the amount of union present.

When from roentgen and clinical examinations union is known to exist, all apparatus is removed and the patient is allowed simply to lie in bed for a period of two weeks. During this period more active physical therapy is instituted, particularly that of active motion of the knee joint. The patient is then allowed up and about with crutches and a well fitted caliper walking splint. The use of a walking caliper splint is essential in these patients, as the earlier they are allowed to walk, the shorter will be the period of disability. While union in these fractures readily occurs, it has been found that complete repair of the fracture is at times delayed and if weight bearing is allowed under such circumstances, angulation at the site of fracture is very apt to occur, with a resulting *covr vara* deformity.

The patient is then ready to be discharged from the hospital and as an ambulatory patient is given physical therapy three or four times a week. This physical therapy consists of infra-red irradiation or diathermy applied to the intertrochanteric region and hip joint, together with massage and active exercise of the knee and hip. Abduction and rotation are particularly important in this type of fracture.

The ambulatory splint is worn until the union has progressed to the point at which weight bearing without support seems safe, in uncomplicated cases about the end of the fifth month.

The other method of treatment that I have used in the management of these fractures is manual reduction with the aid of a mechanical table and the application

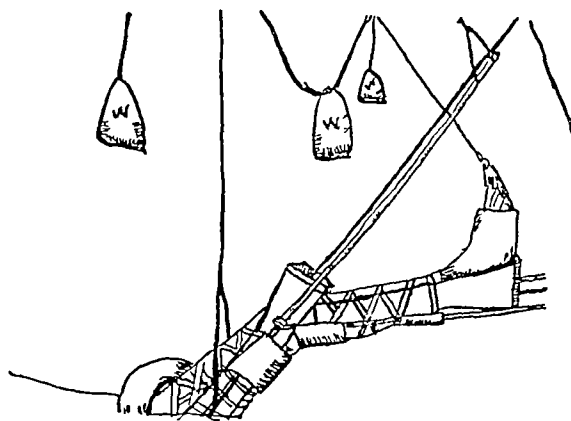


Fig 10—Method of applying two plane traction

of a plaster-of-paris spica in abduction with slight internal rotation. To do this, in most instances, general or spinal anesthesia is necessary.

The disadvantages of this method over the method by traction as described are the necessity for some form of anesthesia and a more rigid immobilization of the entire patient, the lack of ability to sit up in bed, with its consequent predisposition to hypostatic pneumonia and bronchopneumonia, the inability to apply any form of physical therapy to the musculature of the leg, the rigid immobilization of the knee joint which, in

people of this age, is a serious matter as far as future function of the joint is concerned, and the extended period of disability because of the prolonged treatment of a stiffened knee joint. The condition of the knee joint, in most instances, is more of a surgical problem than the intertrochanteric fracture.

The advantage of the method is that it enables one to effect a more perfect immobilization of the fracture line and maintain a greater degree of abduction, neither of which is especially important or worth the disadvantages of the method.

Open operation is indicated when the type of treatment described fails to produce reasonable anatomic reposition of fragments compatible with good function. In my experience, this indication has never arisen. Operative removal of projecting bone fragments may be indicated if the displacement is great enough to cause disability.

PROGNOSIS

If the patient receiving an intertrochanteric fracture of the femur survives the initial shock of the injury, recovery will ensue with a minimum loss of function and more satisfactorily and rapidly than from other types of fracture of the femur.

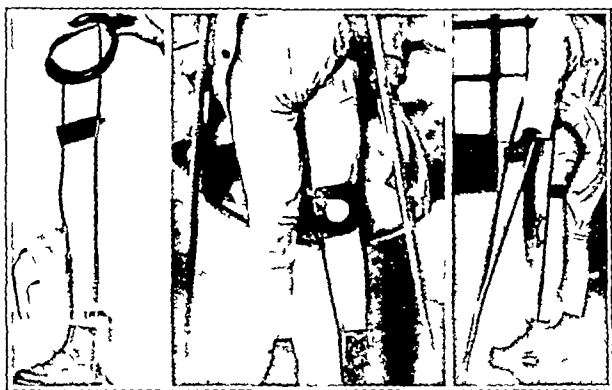


Fig. 11—Ambulatory splint

As nonunion is rare and the reduction of the deformity easily obtained, the prognosis in intertrochanteric fracture is good. The period of total disability rarely exceeds from six to seven months and the period of partial disability may continue for another month or six weeks. In the industrially injured, the period of disability is much longer. This is not unusual in this type of patient, as the disability is complicated by so many other problems than the fracture itself. For this reason any estimate as to the exact period of disability is without value.

In the industrially injured whom I have treated the average time between the injury and the date of return to occupation has been one year. In the same series, however, the average disability of patients not under compensation laws has been from six to seven months.

To state that patients with intertrochanteric fracture recover without any permanent functional loss is indeed an error, as nearly all have some permanent limitation of motion of the hip joint. The most notable limitation is that of abduction. In the industrially injured going before compensation boards, the average estimated permanent loss of function of the leg involved is much greater than is commonly supposed. The exact cause of the permanent limitation of motion is not clear. From a study of 100 patients examined from one to three years after injury, clinical and roentgen examina-

tion of intertrochanteric fractures shows that nearly all have some intra-articular hypertrophic change, although in no instance was the fracture line seen to enter the hip joint. Shortening of the abductor muscles of the hip was also a rather common finding in those patients with limited hip motion.

The question of function of the knee joint in these patients depends on many factors. In some of the patients, varying degrees of permanent loss of flexion have been found. In one or two instances, flexion of the knee was limited to a little better than a right angle. In the majority of patients, however, the permanent loss of function was from 10 to 15 degrees of flexion.

The patients in whom permanent knee joint involvement has been found are those who have been treated with a plaster-of-paris spica for immobilization. The age of the patient is also recognized as a factor in permanent loss of part of the function of the knee joint.

The mortality rate is low. In the patients studied in my series there were no deaths from intertrochanteric fracture, although the average age of these patients was much higher than in patients with fractures of the femoral shaft and almost equaled the average age of patients with fracture of the neck of the femur.

The prognosis then seems to depend for the most part on the protection given the patient's general condition, the avoidance of anesthesia and the early immobilization of the joints, which from my experience is best obtained by the routine use of suspension and traction in the treatment of intertrochanteric fractures.

164 Clinton Street

ABSTRACT OF DISCUSSION

DR KELLOGG SPEED, Chicago. There are three more points about intertrochanteric fractures. They occur in elderly people, a bony union is sure to follow if the patient survives, and the mortality is rather high. Dr Bartley mentioned that this fracture was not a fracture of the neck. It is not a fracture of the femoral neck. The symptoms and physical signs are decidedly different from those of the neck. The amount of impaction is usually striking. The amount of shortening is small and the patient may have so few pronounced symptoms that the fracture itself is overlooked at first until a roentgenogram is made several days or even weeks after the fracture has occurred. I don't see how it can be clinically confused with the dislocation of a hip, especially the ordinary posterior dislocation. Certain visceral symptoms accompany these fractures, namely, blood in the urine and in the stools and the development at times of a mild paralytic ileus. These symptoms are probably induced by the mechanism of the fracture that is by the force resulting from that mechanism, the smashing blow on the hip transmitted to the pelvis and the pelvic organs as in those central fractures of the acetabulum in which the head is pushed through into the pelvic cavity. In a certain percentage of these cases the early and alarming symptoms are directed toward these visceral upsets. I have no brief for the plaster-of-paris dressing in this particular type of fracture because, after all, the dressing that gives satisfaction is the one to use, however, if suspension traction fails to restore the neck angle, it may lead to certain things, particularly to *convexa* and to the formation of excess callus. The cases of most pronounced excessive callus I have ever seen have followed intertrochanteric fracture when the fracture was not reduced, the angle was not restored and the scattered fragments, the large open cancellous bone surface, led to a large formation of new bone.

DR HERBERT C FETT, Brooklyn. The treatment of the patient is most important. As Dr Speed said, if the patient gets well the fracture will get well. Early recognition and the institution of early treatment are important. The early treatment is so important that many of the hospitals are today regarding fracture as an emergency. I was surprised to hear

Dr Bartley say that he started weight bearing between the sixth and the eighth week on the patients who had the split fracture. This seems to me to be somewhat early. I should prefer to keep these patients from weight bearing for at least three months. I was happy to hear Dr Bartley say that he is getting away from the use of plaster of paris in these cases and it is my opinion that one has considerably more trouble with the knee joint subsequently than one does with the fracture itself. His form of treatment is very satisfactory, particularly in view of the fact that an anesthetic can be avoided in the older people. The last point I should like to bring out is the fact that I prefer to use the Steinman pin for the cases in which the fracture will not reduce rather than calipers, because of the possibility of calipers moving and also the possibility of infection.

LUNATE OSTEOMALACIA*

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LOS ANGELES

A peculiar lesion of the lunate or semilunar bone of the wrist is being encountered with increasing frequency, a fact that has stimulated the interest of a number of roentgenologists and is the incentive for this presentation. Having encountered several of these cases, I present the results of a study of various factors in this unusual lesion.

Kienbock,¹ in 1911, first described the roentgen observations in this condition, and on this account the lesion is frequently called "Kienbock's disease." Kohler,² in his book on roentgenology, prefers to call it "secondary post-traumatic malacia." Others, among them Baum,³ Frenkel-Tissot,⁴ Hering,⁵ Kautz,⁶ and Henderson,⁷ have written on the subject using variants in terminology according to their individual points of view as to causative factors and pathologic conceptions. This lack of uniformity of terminology is tending to some confusion in classification. At the present moment authorities are not agreed on several of the aspects of the case, particularly the etiology. Thus, a division of opinion finds one group of observers which consider the condition to be due primarily to a trauma, while another group believes it to be nontraumatic in origin, with an incidental fracture occurring in some of the cases in a later stage of the disease process.

The roentgenologist's attention is directed to the condition by the roentgen finding of a faulty shadow detail of the semilunar bone in certain wrists, some with and others without injury. This abnormal appearance may be merely a fault in shape and size, or it may be a fault in bone detail, or both. A decrease in the size of the lunate bone is sometimes the only change noted. In the advanced case the normal, spongy or cancellous architecture is replaced by an apparently disintegrated bone showing ill defined margins and increased radiability—often with an osteoporosis that is quite marked.

A prominent feature in most of the cases reported in the literature is an insidious onset without sudden or severe injury, sometimes none at all, and a relatively long period of development of the lesion and the tardy appearance of the symptoms. Thus it has been found that, immediately after an injury relatively inconse-

quential, the roentgen shadows of the bones of the wrist are those of entirely normal carpal bones for a matter of several weeks. Because pain and disability still continue, roentgen study, made from several months to a year later, reveals a striking change involving only the lunate bones, the principal features of which appear to be those of a bone necrosis.

Those who regard the condition as the direct result of trauma divide these cases into three groups: (1) those due to the abnormal anatomic conditions incident to the lunate bone, (2) those due to occupational trauma in the form of repeated compression strains, and (3) those in which a single severe compression force initiates the disease.

Many observers consider the changes that characterize Kienbock's disease as due to a shutting off of the blood supply to the semilunar bone, as a result of which a nutritional starvation of the bone occurs with resultant softening, necrosis and disintegration.

In the early stages of the nontraumatic form there is a relatively slight disability and slight pain for a short period, then follows a period of relative absence



Fig. 1—Left and right carpal regions in case 1 showing a normal left and a pathologic right lunate bone—typical shrinkage characteristic of the lesion.

of symptoms lasting from several weeks to several months, and this is followed by a third stage, in which the symptoms return, greatly accentuated. After a long period of time, usually with indifferent success in treatment, the symptoms may subside, but the recovery process is extraordinarily slow and the disability is considerable. The roentgen observations are practically unchanged even long after symptomatic recovery. In a few cases an osteosclerosis of the altered lunate bone was disclosed as an end-result.

Kappis⁸ reports the microscopic observations in a case of malacia of the lunate bone in which there was a complete necrosis of the spongiosa and of the bone marrow.

It has been suggested by some observers that an embolic obstruction in the arterial supply to the semilunar bone is the cause of this lesion, the clot having resulted from a minute fracture, but many investigators question this hypothesis. Others call attention to the anatomic position and relatively poor blood supply of the semilunar bone, offering these as factors in the

8 Kappis M. quoted by Saupe E. Beitr. z. klin. Chir. 128: 187

* Read before the Section on Radiology at the Eighty-first Annual Session of the American Medical Association, Detroit, June 26, 1930.

1 Kienbock R. Fortschr. a. d. Geb. d. Röntgenstrahlen 16, 1911

2 Kohler A. Roentgenology New York, William Wood & Co. 1928

3 Baum E. W. Beitr. z. klin. Chir. 87, number 3

4 Frenkel-Tissot. Fortschr. a. d. Geb. d. Röntgenstrahlen 21: 536

5 Hering W. Zentralbl. f. Chir. (supp.) 51: 505 (March 15) 1924

6 Kautz F. Fortschr. a. d. Geb. d. Röntgenstrahlen 31: 49 1923

7 Henderson M. S. J. Bone & Joint Surg. 8: 504 (July) 1926

production of the softening process that is found both roentgenologically and microscopically

In some of the cases the roentgen shadows failed to reveal a fracture that actually was present, the failure being due to the transverse direction of the line of cleavage to the postero-anterior projections and the difficulty of visualizing the minute detail of the several superimposed carpal bone shadows on the lateral projections. In a number of cases it was only after pressure absorption on the apposing fracture surfaces took place that the shadow of the fracture line appeared on the later roentgenogram, the original roentgen studies failing to show a fracture. In a number of the cases cystic changes appeared to be a predisposing cause for Kienbock's disease. The minute fracture through these tiny cysts, which most roentgenologists of large experience have seen many times in carpal bones, seem logically to be a predisposing cause for the changes that characterize this lesion. One is impressed with the similarity of the changes in post-traumatic malacia of the semilunar bone and those of post-traumatic vertebral collapse, or Kummel's disease.⁹ It seems logical to assume that since the factors of etiology, symptomatology and pathology are more or less identical in these and in similar lesions that are found to involve various osseous structures of the body, they are all essentially the same lesion. Some observers include in this category Kohler's disease of the scaphoid, but Kohler himself specifically disagrees with this hypothesis.

A noteworthy point is the relative frequency of mistaking this lesion for an acute injury when the roentgen evidence is so definitely that of a chronic, pre-existing bone lesion in a large majority of such cases. Undoubtedly, a number of these cases of lunatic osteomalacia go through life unrecognized.

REPORT OF CASES

CASE 1—A white man, aged 40, a machine setter, referred by Dr. M. S. Corbett in January, 1928, stated that in November, 1927, without any injury that he could recall, his hand began to hurt a little, and as it gradually got worse he complained of the pain, which interfered with the use of his hand. In December he had gone to a physician, who made a roentgenogram of the hand. He was told that "the x-ray showed a fracture of one of the wrist bones." The patient states that he could remember no injury at all and was puzzled about the occurrence of a fracture without sudden pain. He was treated for a carpal fracture but did not improve. His hand continued to be sore in one spot for several weeks when, becoming discouraged, he applied to Dr. Corbett, Jan. 9, 1928, for attention.

Because of the history of the roentgen finding of a fracture the patient was referred to me for roentgen study of the part. There was some swelling of the soft tissues of the wrist and pain on movement and on pressure over the carpal area. Carpal tuberculosis was considered a possibility. As the result of my roentgen examination I reported the finding of "no evidence of fracture or of tuberculosis but the typical shadows of a case of semilunar osteomalacia." In figure 1, which is a reproduction of the roentgen appearances, Nov. 9, 1929, a year after the onset, the semilunar bone is seen to have lost its normal shape as compared with the opposite one, and the edges of the bone are rough and irregular while its volume has decreased considerably. The cancellous bone detail is lost and the density of the bone is decreased. The patient reports that he cannot use his hand for heavy work nor can he grip handles without more or less pain. He appears to have at least a 50 per cent disability.

CASE 2—A white man aged 42, a laborer, referred to me at the National Pathological Laboratory by Dr. R. W. McNeely, was lifting meat to a truck, Dec. 27, 1929 when he felt something snap in his left wrist. There was no marked amount of pain. Four days later he was first seen by a physician. At that time he had a painful swelling of the left hand and wrist.

A roentgen study revealed on altered lunatic bone but no fracture. This was treated by immobilization. Three months later he returned to work, somewhat improved. At this time the following observations were recorded. He was unable to flex his fingers completely in the palm of his hand, and there was some limitation of flexion, extension and rotation of the wrist. There was slight pain and evident disability.

My roentgenogram, April 22, 1930 (fig. 2), disclosed a pathologic lunatic bone. The shadows indicated an altered outline and certain decreased densities within the deeper cancellous bone. There was no evidence of a fracture line. (I question whether a fracture actually existed at the time of the accident but believe the already softened bone underwent a partial collapse as the result of strain.) The roentgen evidence was clearly that of a malacia of the lunatic bone, as were also the history and subsequent events.

CASE 3—H. M., a man, aged 22, a bricklayer, a patient of Dr. Sumner L. Koch at the Passavant Memorial Hospital, complained of pain and consequent inability to use the right wrist and hand, May 8, 1930. The pain was mainly in the wrist. In March, 1929, the patient noticed that his wrist would pain on twisting and on lifting objects. At that time the pain was



Fig. 2—Appearance of left wrist showing softened bone area in deep cancellous structure. The usual sequence to this state is the shrinkage incident to the softening of the bone tissues.

not definitely localized, nor was it very marked. In April he consulted a physician, who diagnosed it as a wrist sprain and gave him a light treatment but there was no relief from symptoms. He then went to another physician who also considered it a sprain and prescribed an analgesic sale and rest for ten days. However, he played ball every evening during this time. He noticed some relief during rest but pain recurred on resuming work. He then consulted the company's physician, who suggested a wrist strap and rubbing lotion. The patient had roentgenograms taken at this time but did not wear the strap. He did not learn what the roentgenograms showed. In July the pain became worse, so the physician suggested seeing a specialist in Minneapolis. In August the patient quit work because of the pain and went to see the physician in Minneapolis who took roentgenograms and applied a cast, which was kept on for two months. Following this a brace was put on and kept on until January, 1930. The pain was relieved by this immobilization. In January the patient began a business course but typewriting hurt his wrist so he gave this up. He was advised to rest indefinitely and not to use his hand much. This has not given him relief. His wrist has become rather stiff. A roentgen study by Dr. J. T. Case discloses a definite pathologic process confined to the lunatic bone and was diagnosed as

Kienbock's disease. Operative removal of a softened and necrotic lunate bone was performed by Dr Koch, the crumbled bone tissue offering considerable difficulty when complete removal of the diseased bone was attempted.

CASE 4—W. P. M., a white man, aged about 30, was referred by Dr. Michael Mason to the x-ray department of Wesley Memorial Hospital, Feb. 18, 1928. He came to the hospital with an acute condition of the hand following an injury. He was an outpatient and therefore the records are not complete. Roentgen study at this time disclosed a lesion of the lunate bone, the

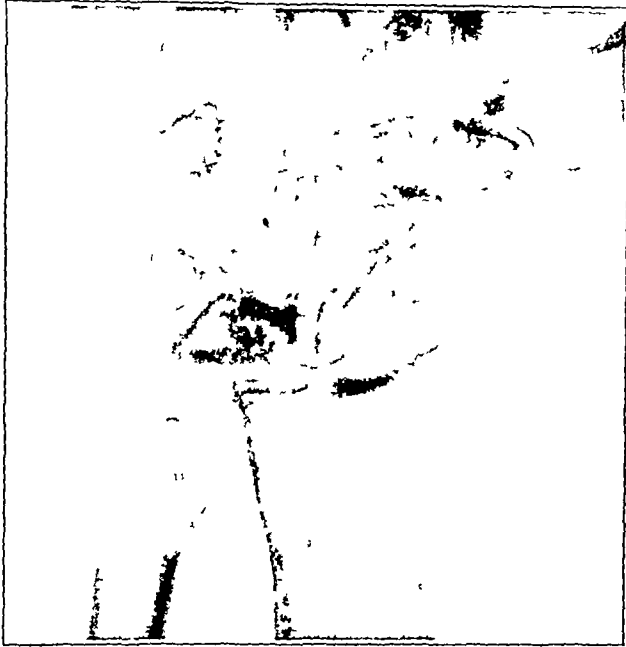


Fig. 3—Appearance of right carpal bones in case 3 as found by Dr. Case about two years after onset. Presents the typical shrinkage of Kienbock's disease.

features of which indicated an old and not a recent change. This might, however, have been an aggravation of an old process in which fracture may have been a part. An analysis of the roentgen shadows disclosed a decrease in the volume, and irregular decreases in density had features of necrosis and disintegration, typical of an osteomalacia of the semilunar bone.

SUMMARY

1. Lunate osteomalacia occurs more frequently than is recognized.
2. Most often it is diagnosed as a fracture, even in cases in which there is no history of an accident or direct injury.
3. Twisting, or a blow to the wrist, is a frequent occurrence that results in the roentgen disclosure of a preexisting pathologic condition of the lunate bone.
4. The essential change is that of a softening of the bone with necrosis and deformity.
5. The surgical removal of the diseased bone does not materially reduce the disability.
6. This lesion often results in a major degree of disability.

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ABSTRACT OF DISCUSSION

DR. HOWARD P. DOUB, Detroit. The clinical observations have been well covered by Dr. Blaine. The thing that is most interesting to me is the question of etiology. This condition in some ways simulates Kohler's disease and some of the familiar conditions of epiphysitis. However, it most nearly simulates Kummell's disease. The etiology of these conditions has not been settled. There are some significant facts, however,

that might be mentioned. Hulten states that he has studied the anatomic anomalies in 400 cases of normal wrist joints and in these he finds 23 per cent in which the ulna is shorter than the radius. He finds other variations. I will dwell only on this. He finds that Kienbock's disease is particularly prone to occur when the ulna is shorter than the radius but never when the radius is shorter than the ulna. Preiser and Kienbock believe that no primary fracture occurs. However, some authors have claimed that, if films were made in various oblique positions, a fracture could be found in these cases. On studying the history of some of the cases reported and from the history of Dr. Blaine's cases this would not seem to be supported, because many of these patients had had their wrists subjected to chronic minor traumas only, such as laying bricks and things of that type. Kienbock believes that it is often caused by a partial or complete subluxation of the bone with spontaneous replacement, in that way destroying the blood vessels and leading to faulty blood vessel supply. However, Buchman has removed a number of these bones and has examined them microscopically, and he reports that he has found the bone tissue and marrow replaced by fibrous tissue. He also finds an increased blood supply rather than a decreased blood supply, and because of that he says that Leriche's theory that there must be increased blood supply in order to produce osteomalacia would seem to be supported. Another thing every physician has noticed at one time or another is the fact that a dead piece of bone is always more dense than a normal piece of bone, and that possibly might lend some support to this theory. The etiology, however, after all is said and done is uncertain, but these facts are interesting in the study of this condition.

DR. THEODORE SOKOW, Kenosha, Wis. I really believe this disease is not as rare as is commonly thought. There are many people treated for rheumatic conditions or for sprains who really have this condition, only it is not recognized. One who



Fig. 4—Appearance of lunate bone in case 3 showing some disintegration, malformation and some shrinkage.

reads ten or fifteen papers written about this subject will find ten or fifteen different opinions about the etiology of this disease. I think Dr. Blaine's explanation is the right one. It must be figured that this condition is found in men and women between the ages of 20 and 40, mostly in men, always in hard working people who are exposed to different injuries. I believe that this disturbance of the semilunar bone is produced by trophic disturbances. Dr. Blaine mentioned a disease of the carpal bones which is not explained so far, some kind of degeneration, formation of small fine cysts, which a good observer can see in many cases, often overlooked. I believe, as Dr. Blaine explained, that

this so called osteoporosis has some relationship to Kienbock's disease. The opinions about treatment of this disease vary. Some authors recommend surgical and others, conservative, medical treatment. The results are good and bad in both kinds of treatment. I observed the case of a man of about 35. He refused surgical treatment, so I started medical treatment with immobilization and physical therapy. I happened to see the man exactly three years later. His hand showed a slight swelling, but there was no pain, the function was only slightly impaired and he was able to do his former work. I think that too much haste should not be shown in recommending surgical treatment. Sometimes, conservative treatment may work out all right.

INCOMPLETE DILATATION OF THE LUNGS AS A FACTOR IN NEONATAL MORTALITY*

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Many children now die at birth or within the neonatal period who could and should live. Among these fatalities the largest group is that which results from one or other of such related conditions as primary or secondary failure of respiration, inadequate expansion of the lungs, and pneumonia developing from atelectasis.

The knowledge requisite to save a large percentage of these lives is now available. It is clear and certain. The method of its application is simple and inexpensive. It is merely an inhalation of carbon dioxide in oxygen for a few minutes several times a day during each of the first few days of life. Every new-born child, even those that appear normal, should receive this treatment as a prophylactic to insure early and complete relief of atelectasis. The hazard of neonatal pneumonia is thus largely eliminated. For the prevention of blindness, disinfection of the eyes with silver nitrate is, in most states, required by law. The inhalation of the mixture of carbon dioxide and oxygen requisite to insure full expansion of the lungs would save many times more lives than this treatment of the eyes prevents cases of blindness. In order to be universal, it will need to be legally required.

For 1927 the Bureau of the Census¹ reported for the birth registration area, or 87.3 per cent of the population, 82,931 stillbirths and 2,137,836 live births—a relation of nearly 4 to 100. Of those infants listed as live births 32,180 died within a day, 8,848 the next day, 6,345 the third day, 11,351 in the next four days, 8,296 in the second week, 5,457 in the third, and 4,617 in the fourth, a total of 77,094 in the first month, and 138,017 in the first year. Together, the stillbirths and neonatal deaths amount to nearly 8 per hundred births. If the statistics for stillbirths were more accurate, the figure would probably be 9, or possibly even 10, per hundred, a tremendous mortality. Premature birth is given as the largest single cause of death, 35,916, but prematurity cannot logically be accepted as in itself a cause, for unless a premature child fails in some func-

tion it lives. It is safe to assume that especially in the premature the real, but unrecognized, cause of death is often incomplete relief of atelectasis, secondary failure of respiration, and pneumonia.

UNRELIEVED ATELECTASIS

These statements in regard to atelectasis and pneumonia are largely based on the recent study by Cruickshank² of the causes of neonatal death as shown by 800 autopsies. That report states:

The importance of asphyxia neonatorum as a cause of neonatal death is emphasized by the fact that almost 68 per cent of the 800 infants included in the present series died from this cause alone. Many of the cases which have been placed in the group of deaths from infection were doubtless predisposed to these infections by the effects of birth asphyxia. It is obvious that a deeply congested and imperfectly expanded lung is much more liable to the development of pneumonia than one in which circulation and aeration are free (page 22). There were 197 cases of pneumonia in the whole series of 800 neonatal deaths, so that this is the most common of all the infective lesions found. It was present in practically a quarter of the infants in the present series, and if deaths from asphyxia, prematurity and atelectasis are excluded, the frequency of pneumonia was practically 2 in 3. Of the infants which died during the first week of life 60 had pneumonia, during the second week there were 87, during the third week 37, and during the fourth week 13 (page 29).

Cruickshank defines the neonatal period as the first month of life.

These observations suggest, and others quoted later verify the suggestion, that even in apparently normal babies complete dilatation of the lungs may not be attained for hours or even days. Considerable areas of atelectasis escape detection by any means but the x-rays. For this reason it is not surprising that Cruickshank should have found nearly 25 per cent of cases of pneumonia in his whole series of neonatal deaths. This percentage is indeed much higher than any other observer has reported. It is accounted for by the fact that the diagnoses were based on histologic examination. Cruickshank's results indicate, therefore, that unrecognized pneumonia consequent on continuing areas of atelectasis is a far more frequent cause of death during the neonatal period than has been heretofore realized. It is particularly to remove this unrecognized hazard that inhalation should be legally required.

Wasson,³ in this country, has reported a roentgenographic study on the lungs of new-born children, showing that even in normal cases full expansion of the lungs does not always occur immediately after birth. "In some cases of normal, easy delivery with the child in good condition, the lungs gave the appearance of full expansion within five minutes after delivery. Again in similar cases of easy delivery, but especially in those of prolonged difficult delivery, the expansion of the lung was found to take place slowly, leaving entire lobes atelectatic or with only scattered areas of atelectasis."

We called the lung fully expanded when there was air throughout all the parenchyma and no evidence of scattered density suggesting remaining atelectasis. The interval of time for this to take place ranged from five minutes to two weeks. The observation that atelectasis continues in some cases for as long as two weeks is highly significant.

* From the Laboratory of Applied Physiology, Sheffield Scientific School, Yale University.

¹ The expenses of this investigation have been met in part by a grant in aid from the National Research Council.

² Birth, Stillbirth and Infant Mortality Statistics, U. S. Bureau of the Census, Thirteenth Annual Report, part 1, 1927. Transactions of the Fifth Annual Meeting, American Child Health Association, 1928, p. 8. Arthur F. L., Prevention of Neonatal Mortality from the Obstetrician's Point of View, Children's Bureau, U. S. Dept. of Labor, Washington, D. C. 1929. Bolt, R. A., Causes and Prevention of Neonatal Mortality, Children's Bureau, U. S. Dept. of Labor, 1929. Frankel, L. K., Prevention of Maternal and Infant Hygiene in the United States, New York Metropolitan Life Insurance Company, 1929. Prevention of Stillbirths and Infant Mortality, League of Nations Inquiry, Brit. M. J. 2: 441 (Sept. 13) 1930.

³ Cruickshank, J. N., Child Life Investigations, The Causes of Neonatal Death, Medical Research Council Special Report Series No. 145, H. M. Stationery Office, Admiralty House, Kingsway, London, W. C. 2. British Library of Information, 5 East Forty-Fifth Street, New York. Wasson, W. W., A Roentgenographic Study of the Infant Chest as Seen at Birth, J. A. M. A. 83: 12-0 (Oct. 18) 1924. Pearce, A. O., Diseases of the New Born in Abt's Pediatric, Philadelphia, W. B. Saunders Company, 2: 253, chapter XIX, 1923.

Von Reuss⁴ summarizes the evidence of German observers on this subject thus

The lung does not undergo complete expansion at the first breath. The researches of Dohrn and Recklinghausen show that the respiratory exchange is extremely small on the first day. Measurements of the lung capacity yielded twenty minutes after birth 17 cc, three and a half hours after birth 21 cc, six hours after birth 36 cc. The depth of inspiration acquires a considerable increase between the first and second day, but many days pass before complete expansion of the lungs occurs. Peiser attributes this circumstance to the incomplete development of the nervous system, to the relatively slight reaction of the respiratory center to the irritation of CO₂, and to the fact that infants move very little and therefore the muscular system only produces in very small amount those irritant substances which stimulate the respiratory center. The expansion of the lung is longer delayed in debilitated and premature infants. Pneumonia, which is very apt to supervene when the risk of infection exists in the atelectatic portions of the lung, is a very frequent cause of death in premature infants. The treatment of atelectasis must be directed toward expanding the lungs by stimulating deep respirations.

To this end cutaneous stimulation to cause the infant to cry is recommended in mild cases, while for the still-born all methods of stimulation and artificial respiration should be applied, although all are often ineffective. Von Reuss quotes statistics (p. 290) which indicate, contrary to a common belief, that mental defects are no more frequent in children who have undergone difficult and asphyxial birth than in those of quite normal birth. Among those resuscitated from stillbirth he says that from 20 to 30 per cent succumb to sequelae, especially in the first two days, while through the first week the mortality among such infants is seven times the rate of those born normally. In the majority of cases (p. 289) this "is due to atelectasis from insufficient expansion of the lungs" or to obstruction, added to which is "the danger of inflammatory lung complication in atelectatic parts of the lung."

The account which von Reuss gives of asphyxia and continued atelectasis, their causes and consequences is an admirable presentation of present knowledge and practice. The only thing lacking is an effective means of combating these conditions and saving life.

PNEUMONIA FROM ATELECTASIS

Recent developments along several distinct, but parallel, lines lend further strong support to the conception of the association of atelectasis and pneumonia. Coryllos and Birnbaum⁵ have presented experimental evidence, which I can confirm from personal observation,⁶ that even in an animal so resistant to pneumonia as the dog atelectasis furnishes a condition in which pulmonary infection readily develops. That pneumonia may originate in atelectasis, when induced in an adult, as these investigators have demonstrated, is a discovery of extreme importance. On the clinical side, recent evidence⁷ from many surgeons and anesthetists demon-

strates that atelectasis frequently occurs after abdominal operations and is the origin from which postoperative pneumonia develops. By the prevention of postoperative atelectasis in clinics where the prophylactic inhalation of carbon dioxide after every operation has been adopted as a routine, postoperative pneumonia has been virtually relegated to the class of preventable and prevented diseases.

Equally important collateral evidence is afforded by experience resulting from the study of carbon monoxide asphyxia.⁸ Formerly pneumonia was a common and often fatal consequence of this form of asphyxia. The relation was long obscure, but it has become clear from the results of the modern inhalational treatment with a mixture of oxygen and carbon dioxide, for in cases so treated postasphyxial pneumonia almost never occurs. The oxygen overcomes asphyxia, but it is the carbon dioxide that induces deep breathing and thus eliminates the condition of the lungs from which pneumonia otherwise often develops.

A closely similar etiology is thus indicated in three conditions that have heretofore been regarded as quite unconnected: (1) anesthesia and postoperative pneumonia, (2) carbon monoxide asphyxia and postasphyxial pneumonia, and (3) asphyxia of the new-born, atelectasis and pneumonia. That fundamentally these three syndromes are essentially alike is demonstrated by the fact that the same prophylactic inhalational treatment is effective in clearing the lungs and preventing fatalities in all three.

Observations, now in progress, on the use of a similar inhalational treatment early in both lobar and bronchopneumonia in adults indicate that in these conditions also it is advantageous, not only to prevent cyanosis by means of oxygen but also to keep the lungs open by stimulating deeper breathing by means of carbon dioxide. The inhalation has been generally administered intermittently by means of the face mask of the H-H inhalator, but a small tent has now been specially designed for continuous inhalation. These observations are under the direction of Dr. J. J. Wittmer, supervising physician of the New York and Brooklyn Edison Companies, the Brooklyn company having made this treatment available not only to its own employees but also during the past year for other pneumonia cases in Brooklyn. The mortality among cases treated early with a mask before the tent was available has been 11 per cent.

In these four related conditions, that of carbon monoxide asphyxia is of especial interest in the present connection. There are now all told in American cities and industries several thousand rescue crews each equipped with an inhalator and trained to resuscitate the victims of carbon monoxide asphyxia by inhalation of oxygen and carbon dioxide. I receive reports of many of the cases so treated. There are frequent reports also of the resuscitation of the new-born, cases both of asphyxia livida and asphyxia pallida, and of the treatment of secondary failure of respiration, continuing atelectasis, and neonatal pneumonia. It was, in fact, by these reports that the discovery of the true nature of the asphyxia of the new-born forced itself on me. They show that the inhalational treatment is frequently successful in cases in which every other means has failed. They afford a clear demonstration

⁴ Von Reuss, A. R. *The Diseases of the New Born*. New York: William Wood & Co. 1929, pp. 304 ff. (Full literature.)

⁵ Coryllos, P. N., and Birnbaum, C. L. Obstructive Massive Atelectasis of the Lung. *Arch. Surg.* 16: 501 (Feb.) 1928. Bronchial Obstruction Its Relation to Atelectasis. *Bronchopneumonia and Lobar Pneumonia*. *Am. J. Roentgenol.* 22: 401 (Nov.) 1929. Lobar Pneumonia Considered as Pneumococcal Lobar Atelectasis of the Lung. *Bronchoscopic Investigation*. *Arch. Surg.* 18: 190 (Jan.) 1929. *Bull. New York Acad. Med.* 4: 384 (March) 1928. Alveolar Gas Exchange and Atelectasis. *The Mechanism of Gas Absorption in Bronchial Obstruction*. *Arch. Surg.* 21: 1214 (Dec. part II) 1930.

⁶ Henderson, Vandell, Haggard, H. W., Coryllos, P. N., and Birnbaum, G. L. The Treatment of Pneumonia by Inhalation of Carbon Dioxide. I. The Relief of Atelectasis. *Arch. Int. Med.* 45: 72 (Jan.) 1930.

⁷ Henderson, Vandell. Asphyxia as a Factor in Postoperative Shock. Atelectasis and Pneumonia. *J. A. M. A.* 95: 572 (Aug. 23) 1930.

⁸ Henderson, Vandell. The Dangers of Carbon Monoxide Poisoning and Measures to Lessen These Dangers. *J. A. M. A.* 94: 179 (Jan. 18) 1930.

that this method of resuscitation is quite as effective and as specific for the asphyxia of the new-born as for asphyxia from carbon monoxide

CARBON DIOXIDE AS THE STIMULUS FOR THE FIRST BREATH

This discovery is so completely in accord with present physiologic theory that it may now seem that it should have been anticipated from two classic papers that of Miescher⁹ published forty-five years ago, and that of Haldane and Priestley¹⁰ published twenty-five years ago. Yet, when one reads Miescher's celebrated presentation of the overwhelmingly complex and difficult problem of the control of respiration, a problem still largely unsolved,¹¹ one ceases to wonder that through all these years no one demonstrated the truth of this inference from the theory of respiration. Instead, the nonbreathing new-born child down to the present day has been swung, chilled and spanked.

Our failure to see the simple truth as it applies to the first breath of life was really quite logical. There was an unanswerable argument against application to the new-born of the Miescher-Haldane theory of the chemical control of respiration. It was to the effect that an asphyxiated child certainly has in its blood a normal or even more than normal pressure of carbon dioxide, yet it does not breathe. If the sensitivity of the respiratory center is decreased, or even abolished, by accumulation of carbon dioxide in birth asphyxia, how then can it be carbon dioxide that normally sets respiration in operation at birth? The initiation of respiration under the chemical stimulation supplied by the blood appeared altogether improbable. No experimenter, obstetrician or pediatrician less bold than the rescue crews of the Chicago Fire Department, who, untroubled by theory, first demonstrated this point and called it to my attention, would have dared to administer carbon dioxide to an asphyxiated new-born child.

Furthermore, it was known that a moderate deficiency of oxygen such as occurs at altitudes in the Rocky Mountains, Alps, Andes and Himalayas does not depress the sensitivity of the respiratory center. On the contrary, as found by the Pike's Peak Expedition,¹² and confirmed by many other observers since, the sensitivity of the respiratory center is much more acute under a low barometric pressure than at sea level. Respiration is greatly increased, the alveolar carbon dioxide pressure is lowered, and the time that the breath can be held voluntarily is considerably shortened. Similarly in carbon monoxide asphyxia the subject breathes excessively and blows off his own carbon dioxide to such an extent that acapnia is added to anoxemia.

There are many drugs and other influences which first stimulate a living organism and then depress its functions. But there was nothing in the effects of low oxygen on mountains or in mines, nor in those of carbon monoxide poisoning, to suggest that asphyxia

may decrease the sensitivity¹³ of the respiratory center to carbon dioxide. No one had observed or suggested that an asphyxiated respiratory center requires a higher pressure of carbon dioxide than normal to induce and maintain its activity.

It has long been known that respiration may be depressed by excess of carbon dioxide. Some of the earliest investigators failed to discover that carbon dioxide is a respiratory stimulant, because they used excessive amounts in their experiments and obtained only depression. All modern observers seem to agree that, up to about 10 per cent, increasing amounts of carbon dioxide in the inhaled air stimulate the respiration of a normal man or animal increasingly, but that above 10 per cent a depressant effect is induced, which with percentages around 15 or 20 passes into narcosis, and at 30 or higher may cause death. But it is really surprising that, as we now find, a center which has been depressed in this way is susceptible of being stimulated to virtually normal activity by inhalation of carbon dioxide.

Some evidence on this subject is afforded by experiments of Henderson and Haggard,¹⁴ who found that when dogs were subjected for a considerable time to atmospheres containing a normal amount of oxygen, with a high partial pressure of carbon dioxide, not only was there an accumulation of carbon dioxide in the blood but the blood alkali also rose. This compensatory increase of the blood alkali necessarily tended gradually to decrease the sensitivity of respiration to carbon dioxide. In one animal that was kept breathing normal air plus amounts of carbon dioxide increasing gradually from 6 up to 20 per cent during five hours, the carbon dioxide capacity, or alkali reserve, rose from 50 to 74. "When the animal was finally allowed to breathe normal air again its respiration ceased after a few breaths and a fatal apnea followed. Apparently the alkali content of the blood had been raised so high that when the abnormally high pressure of carbon dioxide was withdrawn the respiratory center lacked an adequate stimulus."

Whether or not something of this sort occurs in men and animals who are drowned and in infants during prolonged birth is not known. It seems probable that, in such short exposures to excess of carbon dioxide as occur in drowning, the depression of sensitivity must be in the center itself rather than in any increase of blood alkali.

DEPRESSION OF THE RESPIRATORY CENTER BY ASPHYXIA

It is not the logic, but the evidence, that has been deficient and misleading. Success in resuscitation of the new-born by the inhalational method has now demonstrated that, contrary to current assumption, a partially asphyxiated respiratory center will respond to stimulation by carbon dioxide. But after asphyxia more than a normal pressure of carbon dioxide is required to induce the center to become active. Its sensitivity to chemical stimulation is greatly altered in degree but not in character.

In the normal child the respiratory center is sufficiently sensitive, so that breathing is induced under the

9 Miescher F. Bemerkungen zur Lehre von den Athembewegungen. Arch f Anat u Physiol Abt 1885 p 355 reprinted in Die histochemischen u physiologischen Arbeiten von Friedrich Miescher Leipzig 1897 pp 261 295

10 Haldane J S and Priestley J G Regulation of the Lung Ventilation J Physiol 32 225 (May 9) 1905 Haldane J S Respiration Yale University Press 1922

11 An admirably complete and judicious discussion of the control of respiration is given by Dauterbande L. Les échanges respiratoires. Les problèmes biologiques. XIV. Les presses universitaires de France Paris 1930. See also Henderson and Landell The Principles Controlling Respiration in Health and Disease Practitioners Series New York D Appleton & Co. to be published

12 Douglas C G Haldane J S Henderson Landell and Schneider E C Physiological Observations Made on Pike's Peak Colorado with Special Reference to Adaptation to Low Barometric Pressures Phil Tr Roy Soc London Series B 203 189 318 1912

13 A diagrammatic expression of the relation of the sensitivity or threshold of the respiratory center to the pressure of carbon dioxide may be found in Henderson Landell and Scarborough M M Acapnia and Shock. VI Acapnia as a Factor in the Dangers of Anesthesia. Am J Physiol 26 268 (June) 1910

14 Henderson and Haggard H W Respiratory Regulation of the CO₂ Capacity of the Blood. I. High Levels of CO₂ and Alkali. J Biol Chem 33 333 (Feb) 1918

stimulus merely of the carbon dioxide supplied by the child's own respiratory metabolism. Observations on nonbreathing infants show that under prolonged asphyxia the respiratory center undergoes a loss of sensitivity analogous to that known to be induced by morphine. The center then requires a stronger chemical stimulus than the body can supply. It responds in quite normal fashion, not to the normal pressure of 5.5 per cent of carbon dioxide but only to 7, 10, 15 or 20 per cent of carbon dioxide, according to the degree to which its sensitivity has been reduced by asphyxia.

Until this point was covered by decisive evidence it could not logically be asserted, as it can now, that in the normal child breathing is induced under the stimulus of its own carbon dioxide and that a partially asphyxiated new-born child is not stimulated to breathe when it is swung or chilled or sprinkled, but only when the chemical stimulus to its respiratory center becomes sufficiently strong to induce activity.

EVIDENCE FROM DROWNING AND INTRACRANIAL HEMORRHAGE

Support for this conception is afforded by the reports of bathing and boating accidents which I have collected and which show that a similar depression of the respiratory center occurs in the victims of drowning. Although the body of a drowned person doubtless contains more than a normal amount of carbon dioxide, it is insufficient to overcome the depression and to stimulate the center again to spontaneous activity. But the center is not paralyzed, given a renewed supply of oxygen, it responds to the chemical stimulus of carbon dioxide, for the reports of many resuscitations that have come to me show that the administration of carbon dioxide in oxygen is a powerful aid to artificial respiration in restoring natural breathing.

A similar depression of breathing sometimes occurs also during a slow intracranial hemorrhage after an operation on the brain. It was shown by White¹⁵ that this depression of breathing could be combated and life saved by stimulating respiration by inhalation of carbon dioxide diluted in air. This fact is particularly significant in the present connection, for secondary failure of respiration in the new-born is frequently due to intracranial hemorrhage. Sword¹⁶ has found that, in those infants in which secondary failure of respiration is probably due to intracranial hemorrhage, inhalational treatment is often effective.

INHALATIONAL RESUSCITATION OF THE NEW-BORN

A previous paper¹⁷ in *THE JOURNAL* presented the evidence then available on resuscitation of the new-born. It came largely from the rescue crews of city fire departments and need not be here repeated. But the evidence that has accumulated in the three years since may be briefly summarized. For it I am indebted to a number of obstetricians who have now given up the ancient methods of treating neonatal asphyxia and have adopted the inhalation method. Their statements are unanimous to the effect that, in cases similar to those in which formerly breathing was started only after an anxious struggle and considerable manhandling of the child, respiration starts readily once the lungs

are moderately dilated with a mixture of oxygen and carbon dioxide. In every hospital, so far as I can learn, in which the inhalational method of resuscitation has been tried it has now replaced the older procedure and has resulted in a distinct decrease of mortality. Furthermore, it is found that secondary failure of breathing some hours or days after birth, a condition before which the physician was formerly practically helpless, is now easily and effectively overcome. In the pediatric department of one large hospital, which has kindly given me a report, such cases as those which Cruikshank described have been extremely rare since the inhalation method was introduced.

TYPES OF INHALATOR

For use in resuscitation alike of adults and of infants in all forms of asphyxia, the so-called physicians' type of the H-H inhalator¹⁸ is the most generally serviceable portable apparatus. It was with this apparatus that most of the evidence recorded in this paper has been obtained.

For use only on infants, a simple inhalator was figured in a previous paper.¹⁷ A convenient portable inhalator for infants is that of Foregger.¹⁹ It consists of a cylinder of oxygen and carbon dioxide, a yoke having a finely adjustable regulating needle valve, a wash bottle, and a soft rubber bag connected to a light mask of metal or celluloid. It is best to use a mask large enough to enclose the entire face of the infant, not merely the nose and mouth, fitted with an inflatable rubber rim so that it can be held on the face as nearly air-tight as possible. All that is absolutely essential is a mask and rubber bag, such as those just described, with shut-off, or obturator, valves at each end of the bag. The bag is filled as needed from a cylinder of the gas mixture.

For premature infants especially it is often best to use a small chamber, a box herited from below, and with a glass top. A convenient apparatus of this type has been introduced in England by Mellroy.²⁰

Expert anesthetists, who use their anesthesia apparatus also for resuscitation, find the most convenient mixture of gases for use in a wide variety of conditions—anesthesia, carbon monoxide poisoning, cerebral hemorrhage, birth asphyxia, morphine poisoning, persistent hiccup—to be 25 per cent carbon dioxide and 75 per cent oxygen. This mixture is not used in full strength in any but desperate cases, it is usually diluted to any desired degree with pure oxygen from another cylinder. The use of high percentages of carbon dioxide, that is, above 10 per cent, is probably unwise except for those with skill and experience, yet they permit a saving of a few lives that cannot be effected with lower percentages, for the deeper the asphyxial depression, the higher the percentage of carbon dioxide required to induce breathing. Lower percentages, of which 7 per cent is generally best, are wholly safe even in inexperienced hands, and in the large majority of cases afford a quite adequate stimulation.

USE OF AN INHALATOR ON THE NEW-BORN

If the child makes no spontaneous respiratory effort, artificial respiration is applied as follows. The rubber bag of the inhalator is filled with gas from the cylinder,

¹⁵ White, J. C. Deoxygenation by Means of Carbon Dioxide Inhalation. *Arch. Surg.* 7: 347 (Sept.) 1923.

¹⁶ Sword, B. C. Personal communication to the author. But see *Clinical and Laboratory Advantages of Carbon Dioxide in Anesthesia*. *Anesth. & Analg.* 6: 177 (Aug.) 1927.

¹⁷ Henderson, J. A. M. A. The Prevention and Treatment of Asphyxia in the New Born. *J. A. M. A.* 90: 583 (Feb. 25) 1928. The Initiation of Respiration at Birth. *Nature* Aug. 25, 1928.

¹⁸ Made by Mine Safety Appliances Company, Braddock, Thomas and Meade streets, Pittsburgh.

¹⁹ Made by the Foregger Company, 47 West Fort, Second Street, New York.

²⁰ Mellroy, A. L. A Method for the Induction of Respiration in the New Born. *Lancet* 2: 373 (Aug. 20) 1927.

which may then be shut off. The mask is held as nearly as possible air-tight on the face, while the bag is compressed quickly but gently with the hand for half a second or one second, so that the thorax of the child shows a slight expansion. This gentle compression of the bag is repeated every two or three seconds, so that the expansion of the chest is effected in a succession of small steps. If, after the thorax is thus somewhat inflated, no expiratory movement occurs, a gentle pressure is applied with the hand on the sides of the child's chest to produce expiration. The pressures on the bag are then renewed for three or four gentle inspirations, and followed by a gentle compression of the chest by hand, and this process is repeated from four to six times a minute.

Generally, under this treatment, natural breathing soon develops. The mask is then held continuously on the face for ten minutes or until full deep breathing is established. Rebreathing is no disadvantage, for the amounts of oxygen that an infant consumes and of carbon dioxide that it produces are small in comparison to the size of the breathing bag of the inhalator.

Every child, even the most normal, should have a ten minute inhalation at least three times a day during the first few days of life as a prophylactic measure against atelectasis and pneumonia. In a child that receives this inhalation the various devices heretofore used to make the child expand its lungs by crying, such as stinging the soles of its feet with a rubber elastic band and the like measures, may be omitted.

THE USE OF A RESPIRATOR

The question is often raised whether some mechanical or automatic device for artificial respiration is desirable for treatment of the new-born. The answer is an emphatic negative. If an asphyxiated child can be resuscitated at all, it requires only a short period of artificial respiration but without the delay involved in adjusting an elaborate device. A simple mask with a breathing bag that can be compressed by hand to afford inspiration and manual pressure on the chest for expiration are quite as effective as any more complicated apparatus can ever be, and without the risk of injury to the lungs which such apparatus involves. The purpose of artificial respiration for the new-born should be to draw into the lungs a mixture of oxygen and carbon dioxide sufficient to relieve asphyxia, to set natural breathing in operation, to induce the child to dilate its lungs and overcome atelectasis. In other words, the object is to get the child to breathe vigorously for itself.

These statements refer particularly to such apparatus as the pulmotor and lungmotor. The Drinker respirator,²¹ recently introduced, belongs to a different class of apparatus and has an important place. It is primarily designed to maintain long continued artificial respiration in cases of diphtheritic paralysis and poliomyelitis. For this purpose it is extremely useful and indeed lifesaving.

INTRODUCTION OF INHALATIONAL TREATMENT

The new knowledge reviewed here regarding the initiation of respiration and the risks of unrelieved atelectasis will be of little value unless put to use. Unfortunately, inhalational treatment does not introduce itself like arsenamine or insulin. Experience shows that many physicians will not provide themselves beforehand with the necessary apparatus and that even hos-

pital superintendents are reluctant. In order to attain maximal effectiveness, inhalational treatment of the new-born will need to be required by law.

As a preliminary to legal enforcement, it is essential that some agency in each city should provide itself with infant inhalators and supply them to physicians and midwives at a rental for each case sufficient merely to cover the cost of the small amount of the gas used. The city health department is obviously the proper agency to supply the inhalators, to give the necessary simple instructions to midwives, and to maintain some degree of supervision over the respiratory prophylaxis of the new-born outside of hospitals.

CONCLUSIONS

The natural stimulus initiating breathing in the normal child at birth can now for the first time be stated on sufficient evidence to be the carbon dioxide produced in its own body. While physiologic theory for many years past has suggested this view, the objection could not be overcome that a nonbreathing child probably has a higher pressure of carbon dioxide in its blood than one that breathes spontaneously. The evidence from the effects of inhalation, as set forth in this paper, clears away this objection. It shows that the asphyxiated respiratory center of the new-born, or of a drowned person, requires a much higher pressure of carbon dioxide than does a normal center to stimulate it to respiratory activity.

This conclusion, which now seems so simple, is in reality the result of a long succession of arduous, abstract and theoretical studies on the meaning and control of respiration by many investigators, not only in modern times but during generations and centuries past.²²

For the asphyxiated new-born child, dilation of the lungs with a mixture containing a sufficient amount of carbon dioxide in oxygen to stimulate natural breathing is the one really effective method of resuscitation.

Inhalation of this mixture²³ is equally important for many children that breathe spontaneously, for among these cases incomplete dilatation of the lung is a common condition, predisposing to pneumonia and causing nearly as large a mortality as stillbirth itself. This inhalation should therefore be administered not only to those infants who require it for resuscitation from asphyxia but to all children, even to those that appear entirely normal, during the first few days of life as a prophylaxis against continuing partial atelectasis, secondary asphyxia, and pneumonia.

Every maternity hospital should be equipped with at least a simple inhalator for the new-born, or better with an inhalator suitable for infants and adults as well, so that the mother may also be treated when an anesthetic or narcotic has been used. For deliveries outside of hospitals the city health departments should provide simple infant inhalators to be rented to obstetricians and midwives for the cost merely of the oxygen and carbon dioxide consumed. After a reasonable period of education for obstetricians, midwives and nurses, a legal requirement similar to that for the prophylaxis of blindness should be established. Only under such requirement will the inhalational prophylaxis of atelectasis come into such general use that it may save the greatest possible number of lives.

4 Hillhouse Avenue

²¹ Drinker, Philip, Shaughnessy, T. J. and Murphy, D. P. The Drinker Respirator. J. A. M. A. 95: 1249 (Oct. 25) 1930.

²² Fulton, J. F. Selected Readings in the History of Physics. Baltimore, C. C. Thomas, 1930.

²³ In practice this mixture is called carbogen. 7 per cent carbogen is 7 per cent carbon dioxide and 93 per cent oxygen.

THE FEEDING OF GASTRIC TISSUE
IN THE TREATMENT OF PER-
NICIOUS ANEMIA*II MILTON CONNER, MD
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Castle and Locke¹ fed muscle meat to normal persons, recovered the meat by causing vomiting, and refed it to patients who had pernicious anemia thus causing a response of reticulated erythrocytes, an increase in the number of erythrocytes, and clinical improvement similar to that found when liver or its extract was used.

This work led Sturgis and Isaacs,² in collaboration with Sharp,³ to try the effect of feeding desiccated gastric tissue to patients who had pernicious anemia, with results similar to those obtained with liver or its extract. Likewise, Castle and Locke's work led me to feed raw gastric tissue to patients who had the disease, with results which already have been reported in six cases,⁴ and which were similar to those obtained with liver and liver extract. Another fact which suggested the use of gastric tissue was that I⁵ had found that in approximately 26 per cent of 154 relatives of more than 100 patients who had pernicious anemia, the gastric content lacked free hydrochloric acid. Eighty per cent of these tests were made by the fractional method. This fact, and the achylia found in practically every case of pernicious anemia served to fix attention on the stomach as a possible etiologic factor and made the feeding of gastric tissue seem a logical procedure. Wilkinson,⁶ also, was influenced by Castle and Locke's work to carry out similar experiments in cases of pernicious anemia. He fed both raw and desiccated gastric substance, with similar results. Snapper and Dupree,⁷ Renshaw⁸ and Rosenow,⁹ following these original workers, have reported similar results of feeding the same material.

I have prescribed treatment with gastric tissue of swine in some form, or with honeycomb tripe (pickled gastric tissue of cattle), for sixty patients. Certain of these were excluded from this study. For example, four patients whose treatment consisted mainly of tripe were not included. Two were not considered in this paper because the treatment with gastric tissue of swine was discontinued in a few days, in one case because of poor cooperation on the part of the patient and in the other because the patient's relatives wished to take him home on account of marked neurologic symptoms, for relief of which I could promise nothing.

Two of the remaining fifty-four patients were fed swine stomach after failure of treatment with tripe, and five were sent home for treatment without having been treated at the clinic. One has been under treatment only a few days at the diet kitchen. The remaining forty-six patients were under careful observation in the hospital and are included in the detailed study.

Sixteen of these forty-six patients were fed raw whole stomach of swine exclusively, six raw mucous membrane of the entire stomach with other meat, two the same without other meat, two, raw whole pyloric portion, two raw whole fundus, and one patient raw entire gastric wall save mucosa without other meat. Three patients were given whole stomach dried in our own laboratory, and six a preparation of desiccated hog stomach according to the method described by Sharp and by Sturgis and Isaacs. Eight patients were given various combinations of these, including, also, mucous membrane dried by one of the packers. These combinations were made because of temporary exhaustion of the supply of one or another substance, because of greater ease in taking one than another, or because of the difference in expense. The results of the use of all these different preparations are considered as a unit, as the results were so similar. The results with tripe are not included in this report, for they were inconsistent and unconvincing. It can be said, however, that the effects of tripe were much inferior to those with raw or dried gastric tissue of swine. When entire gastric wall was used, from 240 to 480 Gm daily was given, whereas half this amount was given when mucous membrane alone was used. A corresponding amount of the dried material was used, making allowance for shrinkage to a sixth or a seventh of the original weight in the process of desiccation. The raw material, after it was ground in a seprasiave usually was given in orange, tomato, cranberry or other fruit juice, and the dried material was given in fruit juice or water, as preferred. The taste or smell of the raw stomach was not objectionable to most patients.

In most instances a regular hospital diet was administered also, but in a few cases other meat of any kind was not allowed. Significant difference was not noted as a result of eliminating other meat. In one case, in which that part of the gastric wall employed consisted of 240 Gm of mucosa only, without other meat, but with 100 Gm of other proteins, mostly of animal origin, the proportion of reticulated erythrocytes increased from 0.8 per cent to 33.4 per cent in eight days, and in another, similarly treated, they increased from 0 per cent to 10.6 per cent in six days. In one case in which entire gastric wall except mucosa was given, the proportion of reticulated erythrocytes increased from 0 per cent to 33.8 per cent in seven days. In this case, other meat was not given. It is possible that the mucosa, before it was removed, may have exerted some action on the muscular coat which made it effective, but it seems unlikely that the minute amount of muscle in the muscularis mucosae could produce any large part of the effect in those who were fed mucosa only without other meat. In two cases, the remainder of the diet was selected for its high content of vitamins but did not include liver. In only two cases was hydrochloric acid used. A further trial of hydrochloric acid in conjunction with the feeding of gastric tissue will be made.

Cooked gastric tissue was used in only one case because Castle had shown that the substance which

* From the Division of Medicine, the Mayo Clinic.

1 Castle W. B. and Locke E. A. Observations on the Etiologic Relationship of Achylia Gastrica to Pernicious Anemia, *J. Clin. Investigation* 2: 235 (1928).

2 Sturgis C. C. and Isaacs Raphael. Desiccated Stomach in the Treatment of Pernicious Anemia, *J. A. M. A.* 93: 747-749 (Sept. 7) 1929.

3 Sharp L. A. An Antrumeic Factor in Desiccated Stomach, *J. A. M. A.* 93: 749 (Sept. 7) 1929.

4 Conner H. M. The Treatment of Pernicious Anemia with Raw and Cooked Swine Stomach, *J. A. M. A.* 94: 388-390 (Feb. 8) 1930. *Abstr. Proc. Staff Meetings of Mayo Clinic* 4: 319 (Oct. 30) 1929.

5 Conner H. M. Hereditary Aspect of Achlorhydria in Pernicious Anemia. A Study of Gastric Acidity in 154 Relatives of 109 Patients Having Pernicious Anemia. *Abstr. Proc. Staff Meetings of Mayo Clinic* 4: 200-202 (June 26) 1929. *J. A. M. A.* 94: 606-612 (March 1) 1930.

6 Wilkinson J. I. Pernicious Anemia. Preliminary Reports on Results Obtained by Treatment with Certain Preparations of Stomach. *Brit. M. J.* 1: 236-239 (Feb. 8) 1930.

7 Snapper I. and Dupree J. D. G. Traitement de l'anémie pernicieuse par l'estomac de porc desséché et pulvérisé. *Bull. et mem. Soc. méd. d'hop. de Paris* 46: 662-665 (April 21) 1930.

8 Renshaw Arnold. Treatment of Pernicious Anemia with Desiccated Hog's Stomach. *Brit. M. J.* 1: 334-335 (Feb. 22) 1930.

9 Rosenow G. Behandlung der perniziösen Anämie mit getrocknetem Schweinestomach. *Klin. Wchnschr.* 9: 652-653 (April 25) 1930.

caused the favorable reaction was thermolabile¹⁰ Before any effect was obtained, because of marked vomiting, administration of cooked gastric tissue was discontinued and desiccated hog stomach was administered instead. This case was not included in the table of results. Only one patient was given transfusions, two in number. This patient probably made the poorest response in the whole group. The results of the use of desiccated hog stomach were so unsatisfactory in this case that liver extract was substituted, after which there was better response.

The effects on the blood are best considered by dividing the cases into groups according to the number of erythrocytes in each cubic millimeter of blood when the treatment was instituted, as follows: group 1, less than 1,000,000; group 2, between 1,000,000 and 2,000,000; group 3, between 2,000,000 and 3,000,000; and group 4, between 3,000,000 and 4,000,000.

The percentage of reticulated erythrocytes among all erythrocytes, which is almost universally accepted as the criterion by which regeneration of blood is judged, increased most markedly in the cases in which the treatment was started when the number of erythrocytes was small. In cases in which the erythrocytes numbered more than 2,000,000 in each cubic millimeter of blood, the increase in the percentage of reticulated erythrocytes was not so great, and in those in which erythrocytes numbered more than 3,000,000, only moderate or slight increase in the percentage of reticulated erythrocytes was seen. In the whole group, the proportion of reticulated erythrocytes rose to a maximum of 65.8 per cent in one case, to 40 per cent in one, to between 30 and 40 per cent in six cases, to between 20 and 30 per cent in five, and to between 10 and 20 per cent in thirteen. The proportion of reticulated erythrocytes of 65.8 per cent is the highest I have ever observed in a case of pernicious anemia under any form of treatment. The patient in this case received half a pound daily of the entire thickness of the wall of the pyloric portion of the stomach only. In the group of patients whose treatment was started when the erythrocytes numbered less than 1,000,000, the proportion of reticulated erythrocytes increased to an average maximum of 24.3 per cent¹¹ in eight and three-fourths days, the number of erythrocytes from 910,000 to 2,040,000 and the concentration of hemoglobin from an average of 18.8 per cent to 44 per cent in nineteen days. In those whose treatment was started when the erythrocytes numbered between 1,000,000 and 2,000,000 the proportion of reticulated erythrocytes increased to an average maximum of 22.8 per cent in nine and a half days, the number of erythrocytes from 1,510,000 to 2,800,000 and the concentration of hemoglobin from 32.8 to 56.5 per cent in an average of twenty-one and one-fourth days.

In the group of patients whose treatment was begun when the erythrocytes numbered between 2,000,000 and 3,000,000 the proportion of reticulated erythrocytes increased to an average maximum of 6.9 per cent in approximately eight days, the number of erythrocytes from 2,350,000 to 3,510,000 and the concentration of hemoglobin from 52 to 71 per cent in an average of nearly twenty-five days. In those whose treatment was started when the erythrocytes were between 3,000,000 and 4,000,000 the proportion of reticulated erythrocytes increased to an average maximum of 3.6 per

cent in seven days, the number of erythrocytes from 3,360,000 to 3,710,000, and the concentration of hemoglobin from 70 to 76 per cent in an average of nineteen and a half days. The two instances in which the proportion of hemoglobin was estimated before treatment as grams in each 100 cc of blood were left out of consideration in figuring the average. Most of those patients who had a high proportion of hemoglobin and a large number of erythrocytes when treatment was started had marked neurologic symptoms. In many cases the number of erythrocytes decreased for a few days after treatment was started before sufficient time had elapsed to obtain any effect. If the increase should be figured from the lowest level obtained after treatment was instituted, the figures for the average increase in the number of erythrocytes in the several groups would be from 13 to 26 per cent higher. At the last report, either by letter or by examination at The Mayo Clinic, the highest number of erythrocytes in any case of the whole group was 6,000,000, the lowest 2,800,000, and the average 4,394,000, the highest percentage of hemoglobin was 100, the lowest 65, and the average 80.86. In several instances the increase in the proportion of reticulated erythrocytes was delayed much beyond the average, and in several it was prolonged over several days instead of reaching a sharp peak from which it fell rapidly. The number of leukocytes in the whole group increased from an average of 4,873 to one of 6,464 and the platelets from 101,540 to 118,000.

In the blood smears, after treatment, diminution or disappearance of the microcytosis and anisocytosis was seen, and also disappearance of nucleated erythrocytes in cases in which they had been present. In some instances the distribution and character of leukocytes returned to normal, but in others the shift to the right remained as the only morphologic evidence of pernicious anemia.

The most marked effect on the symptoms was noted in those cases in which the patients were sickest and who had the smallest number of erythrocytes at the time treatment was started. The color of the skin rapidly changed from the usual lemon yellow to a simple pallor and later to normal, the icteric hue of the sclerotics usually disappeared in a relatively short time. The weakness, anorexia, dyspnea and edema usually subsided rapidly. Gastric symptoms ordinarily were relieved but not with such great regularity. The soreness of the tongue usually disappeared, and the diarrhea usually but not always, subsided.

A questionnaire was sent to twenty-eight of the forty-six patients, of whom twenty-six answered more or less completely. Those to whom a questionnaire was not sent had been treated in the hospital so recently that such a procedure seemed useless, or else they were still under observation in the hospital. Nineteen patients reported regular and seven irregular use of the diet. Twenty-two reported no trouble in taking the gastric material and four slight trouble. One patient reported himself to be well and twenty-five reported themselves to be improved. Eight stated that they had had diarrhea at some time before treatment whereas eighteen had none. Of these eight patients, four were well and the condition of four had improved. One patient reported that weakness had disappeared, twenty-one that weakness was less marked, one that the weakness was the same as before and three did not make a statement in regard to weakness. Eighteen patients reported soreness of the tongue at some time before treatment and eight that their tongues never had been sore. Nine of

10 Castle W. B. The Aetiological Relationship of Achylia Gastrica to Pernicious Anemia. *Proc. Roy. Soc. Med.* 22: 1214-1216 (June 11) 1929.

11 In one case there was a belated increase in the average proportion of reticulated erythrocytes to 26.2 per cent. This increase occurred after the tabulation had been prepared and to try to include this belated increase would have been impracticable.

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the eighteen were well after treatment, seven were improved, and two were the same as before. Eighteen patients reported that the appetite had been normal since treatment, five that it was improved, and three that it was the same as before. Twenty-three patients reported no relapse, whereas three patients reported having had a slight relapse while under treatment. Seven reported normal activity, ten restricted activity, and eight that they were not working, one did not report in regard to activity.

three that it was the same as before, and none that it was worse. Nineteen reported that they had suffered from lack of control of the limbs in walking before treatment. One patient reported disappearance of this symptom, and twelve patients its improvement, six were the same as before, and none were worse since treatment was instituted. The figures as to lack of control of the limbs are probably much too high as to incidence. It is probable that in some of these the supposed lack of control was due simply to weakness. Patients who had

Erythrocytes in Each Cubic Millimeter of Blood at Beginning of Treatment

Case	Days in Hospital	Beginning of Treatment in Hospital					End of Treatment in Hospital					Highest Proportion of Reticulated Erythrocytes	
		Hemo- globin per Cent (Dare)	Erythrocytes in Each Cubic Millimeter of Blood Millions	Leukocytes in Each Cubic Millimeter of Blood	Platelets in Each Cubic Millimeter of Blood Thousands	Reticu- lated Erythro- cytes per Cent	Hemo- globin per Cent (Dare)	Erythrocytes in Each Cubic Millimeter of Blood, Millions	Leukocytes in Each Cubic Millimeter of Blood	Platelets in Each Cubic Millimeter of Blood, Thousands	Reticu- lated Erythro- cytes per Cent	Days After Per Treatment Cent Was Begun	
Less Than 1 000 000													
1	27	15	0.75	3 000	60	1.4	25	2.5	4 800	140	2.6	32.2	8
2	29	20	0.03	1 700	4	2.0	28	2.4	2 800	120	4.67	21.2	8
3	11	20	0.08	2 400	-	0.8	31	1.4	4 800	60	23.4	32.4	10
4	9	20	0.09	1 400	6	0.1	25	1.13	1 000	30	3.2	3.2	9
Average	19	18.8	0.01	2 225	5.5	1.1	41	2.04	3,800	87.5	8.5	24.3	8.15
Between 1 000 000 and 2 000 000													
5	27	38	1.62	4 100	80	0.3	38	1.72	4 900	100	0.9	35.6	8
6	34	34	1.37	5 000	1.0	3.6	63	78	5 900	240	0.2	7.8	4
7	27	45	1.07	4 700	160	0.7	75	6.9	8 800	150	-	7.2	6
8	27	18	1.07	2 400	40	3.6	75	2.7	7 000	64	0.8	16.8	8
9	24	40	1.97	7 400	160	0.8	60	3.29	7 000	70	1.0	14.3	10
10	20	42	1.96	5 400	1.0	4.0	65	3.76	60	60	2.2	5.9	6
11	21	70	1.32	5 500	80	-	68	7.06	7 400	100	3.0	13.6	9
12	21	40	1.89	4 900	1.0	0.1	70	2.93	7 500	120	3.8	22.6	11
13	21	30	1.42	2 700	1.0	0.9	50	2.23	6 000	147	4.7	57.0	25
14	25	35	1.50	3 000	-	0.5	70	2.14	10 100	100	2.2	35.2	8
15	27	20	1.04	1 700	2	0.1	44	1.84	3 200	35	5.2	13.4	14
16	23	38	1.66	5 000	170	4.0	68	3.44	9 100	120	-	9.8	5
17	21	28	1.1	3 700	200	3.2	65	7.2	4 600	180	1.6	18.2	7
18	25	28	1.21	5 900	40	1.6	40	1.6	4 800	120	24.2	24.2	21
19	22	40	1.59	4 800	1.0	1.0	71	1.03	9 000	200	2.6	10.8	8
20	15	32	1.8	2 400	95	0.5	75	2.67	5 800	40	9.4	40.0	8
21	21	80 Gm	1.6	6 400	60	3.1	61	3.37	8 600	80	7.27	19.4	8
22	20	37	1.53	1 800	44	1.0	58	3.23	3 900	180	5.0	39.0	8
23	11	20	1.13	2 400	60	1.2	48	2.07	4 200	100	44.0	65.8	7
24	19	75	1.57	-	-	1.5	45	2.09	3 600	80	14.8	16.7	11
25	22	26	1.19	1 600	72	0.1	70	7.16	5 800	160	7.4	32.0	8
26	0	38	1.42	3 000	140	1.2	40	2.07	9 800	104	10.8	16.8	8
27	7	30	1.34	6 000	144	1.1	31	1.1	6 700	80	31.0	31.0	9
28	7	47	1.89	3 000	100	1.6	61	2.7	80	80	9.8	10.6	6
29	7	20	1.32	2 800	25	1.0	11	1.5	4 200	160	30.2	30.2	8
Average	21.24	32.8	1.51	3 966	102.0	1.65	66.5	2.80	6 100	117.5	8.7	22.8	9.15
Between 2 000 000 and 3 000 000													
30	21	48	2.20	5 800	80	1.4	72	3.00	11 000	120	1.7	6.7	5
31	45	60	2.67	5 400	140	1.5	70	3.95	6 800	120	2.0	6.2	10
32	26	48	2.20	10 800	90	1.1	61	3.37	7 000	100	0.5	11.3	8
33	20	48	2.01	4 900	120	2.1	71	3.4	6 300	40	-	7.0	4
34	33	50	2.4	6 000	76	2.2	68	3.37	7 700	220	1.8	5.4	8
35	24	43	2.14	14 100	40	0.4	60	3.56	10 900	40	0.1	4.7	10
36	21	50	2.20	6 000	170	1.0	71	3.38	7 400	120	2.4	6.0	7
37	14	60	2.79	4 900	80	1.1	70	4.08	8 900	120	0.6	1.8	8
38	10	88 Gm	2.40	5 700	80	1.0	71	3.28	7 600	200	1.4	10.0	9
39	13	50	2.41	5 000	94	0.2	71	3.36	6 700	120	3.4	3.4	7
40	20	60	2.55	6 700	160	1.4	73	3.57	7 500	110	4.4	13.8	8
Average	24.81	52	2.33	6 718	85	1.2	71	3.51	7 750	119	1.6	6.9	7.5
Between 3 000 000 and 4 000 000													
41	41	75	3.57	6 400	120	0.2	83	4.20	7 500	160	1.5	3.8	9
42	18	70	3.62	5 000	140	0.6	80	4.20	8 200	80	1.2	2.8	9
43	10	70	3.49	7 000	100	0.4	70	3.21	5 900	100	5.5	7.2	8
44	22	58	3.14	9 900	170	0.7	70	3.69	8 600	120	1.0	1.9	5
45	5	75	3.34	6 000	260	0.9	80	3.7	9 100	200	0.8	0	6
46	11	73	3.00	7 400	100	0.5	70	3.92	5 600	112	2.6	5.2	6
Average	19.50	70	3.36	6 883	150	0.4	76	3.71	7 500	159	2.1	3.6	7

* On the sixteenth day of treatment 26.2 per cent of erythrocytes developed

The effect on nervous symptoms has been less striking than that on the blood and general condition. In many cases the numbness and tingling has been improved, in some it has been abolished. Twenty-two patients have reported, by answers to questionnaires, that they had these symptoms before treatment, four have reported that they did not have them. Following treatment, five of these patients were rid of their paresthesia, fourteen reported that it was improved,

true psychosis have not been treated, but minor mental symptoms have seemed to improve with treatment of the condition. In one case, loss of libido was marked before treatment, whereas libido was exaggerated after treatment.

Fractional analysis of gastric content after a test meal has been made in all cases before treatment. Achlorhydria was present in all. In eleven cases a test of gastric acidity after injection of histamine was made.

before the patient left the hospital or at a later date. Free hydrochloric acid had not returned, nor was total acidity significantly increased in any case as the result of treatment.

Of the thirty-one cases in which the proportion of eosinophils was estimated both before and during, or after, treatment, in only ten was a higher percentage of eosinophils found during or after treatment than before. In only two cases was the increase so great that it appeared likely to be due to the treatment. The percentage of eosinophils was not as markedly increased in any case as it was by the feeding of raw liver. These data are not entirely in accord with those of Wilkinson, who reported that eosinophilia occurs after the use of gastric tissue. The absence of marked eosinophilia is additional evidence of the freedom from intestinal parasitosis, including trichinosis, among patients who use the raw material.

In order to investigate the possible transmission of parasites by the feeding of raw gastric tissue, the stools have been examined in most instances before, during and after the administration of the raw material. A parasite has not been found in the stool after treatment in any instance in which it was not present before. There is no parasite which inhabits the cavity or wall of the stomach of swine that is pathogenic for man, so far as I am able to determine. Trichinae do not occur in the gastric wall of swine. No patient is known to have contracted the porcine type of undulant fever as a result of the administration of raw stomach of swine.

COMMENT

Results with the different preparations of gastric tissue have been similar. However, not enough patients have been given pylorus alone, fundus alone, mucous membrane alone (with and without other meat), or whole stomach except mucosa to justify a statement that the effect of any of these fractions is exactly similar to that of whole stomach. In the cases in which mucous membrane alone was given, in two cases unaccompanied by other meat and in six with other meat, the response was satisfactory, also, in one case in which whole stomach except mucosa was given, a satisfactory effect was produced without the use of other meat. The dried material has the advantages of being easily available in city or country and of being of smaller bulk, but it has the disadvantage of being higher in price. The raw material has the advantage of being lower in price, and, to some patients, of being better in taste, but it has the disadvantage for some rural patients of being somewhat difficult to obtain and to keep. However, for rural homes, the invention of a cheap, practical refrigerator, operated by a kerosene flame, has now made the latter objection a minor one. Comparison of results with the different preparations and different amounts will be made the subject of a later contribution. The results with 240 Gm. of raw whole stomach make it appear that this is the average curative dose. Of desiccated hog stomach the curative dose usually was from 20 to 40 Gm., ordinarily about half the curative dose is required as a maintenance dose.

Ten patients had at some time been treated with liver, six with liver extract, and seven with both, either elsewhere or at the Mayo Clinic before institution of the treatment with gastric tissue. In almost all instances, however, the treatment with liver had been discontinued sufficiently long before the feeding with gastric tissue had been begun to make it relatively certain that none of the results obtained was a remnant of those following treatment with liver.

Among patients who answered the questionnaire, three had taken some liver since they had gone home, one patient, half a pound (225 Gm.) each day for two weeks while unable to get the gastric tissue, one, three slices a week, and one, a quarter pound (110 Gm.) every other day. Of course, in evaluating the results of feeding gastric tissue, one must be certain that the patient is not taking liver or its extract in any considerable amount.

No other treatment that is known to influence formation of blood was used in any instance, except two transfusions in one case, a diet rich in vitamins but containing no liver in two cases, and dilute hydrochloric acid in two cases. In one case in which moderate doses of liver extract had been taken for two years, with little improvement, there was seen a rapid increase in reticulated erythrocytes to 35.6 per cent, and a comparable increase in erythrocytes when raw stomach was fed. In another case, in which liver extract had been given for two years, with good results until recently, when there was a relapse, treatment with raw stomach is being given with satisfactory results. On the other hand, in one case there was poor response to desiccated hog stomach and good response to administration of liver extract.

The increase in percentage of reticulated erythrocytes and mature erythrocytes and the improvement in the general and neurologic symptoms are similar and apparently equal to those obtained by feeding liver or liver extract. The material also apparently has a mild effect of stimulating formation or liberation of platelets and leukocytes.

SUMMARY

Sixty patients who have pernicious anemia have been treated with gastric tissue of swine or with tripe. Two of those were given gastric tissue of swine after virtual failure with tripe, and tripe constituted the sole form of gastric tissue given to two. Forty-six of the patients have been carefully studied under observation in a hospital. Raw and dried preparations have given approximately equivalent results. The mucosa, the remainder of the stomach after the mucosa was removed, and whole gastric wall were used separately, and each proved effective in the cases treated. The presence of muscle meat was not required to obtain results in the two cases treated with mucosa without muscular coat or other muscle meat. Fundus and pylorus, each used separately, produced satisfactory but not equal results. The effects on the reticulated erythrocytes, mature erythrocytes, hemoglobin and leukocytes are similar to and apparently equivalent to those obtained by feeding liver or liver extract. The effects on the general and neurologic symptoms are apparently about the same as those obtained with liver or its extract. All patients so treated are alive so far as I know.

Challenging Civilization—The behavior problems of children are not to be considered as essentially mental nor as primitive evidence of mental disability or disease. In some ways the delinquent is one of the challenging factors of civilization. He is an indicator of communal maladjustment. His problems are the problems of the community. He is striving for personal satisfaction and harmony which in some way are at variance with the standards of the community. There are times, however, when the delinquency is wrong but the delinquent is right just as there are times when the punitive action of a community may be right but the community itself may be ethically wrong.—WILEY S. BEHAVIOR PROBLEMS OF CHILDREN with Special Reference to Delinquency. *Am J Dis Child* November 1930.

THE TREATMENT OF SECONDARY ANEMIA

FURTHER OBSERVATIONS *

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This report deals with the comparative merits of iron, whole liver, liver extract and various combinations of these substances in the treatment of patients with anemia due to chronic hemorrhage or chronic chlorosis.

These two interesting types of secondary anemia frequently escape both recognition and treatment. The former is the result of the persistent loss of small amounts of blood over a long period of time. Such patients usually seek surgical advice because of menorrhagia or bleeding from the intestinal tract. The second type is not associated with any recognizable hemorrhage but occurs in young or middle-aged women and is characterized by a relatively low level of hemoglobin with an essentially normal red blood cell count.

Since the publication of a previous paper,¹ a new and more accurate method of studying anemia, recently

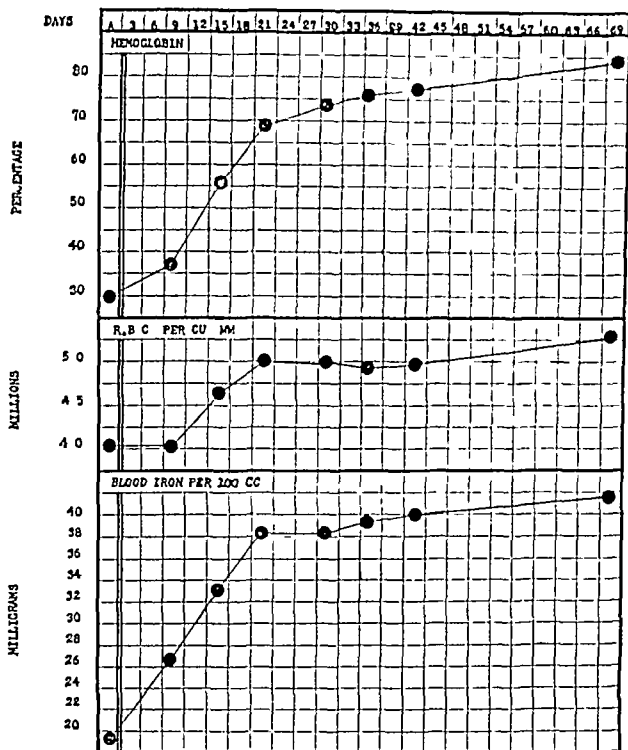


Chart 1 (case 1, table 1).—A graphic representation of the effect of iron on the blood of a patient with chronic secondary anemia. The double vertical line at the left of the chart indicates the beginning of treatment with iron.

utilized by Murphy, Lynch and Howard,² has been employed in this investigation. These authors used

* From the Departments of Surgery and Medicine of the Peter Bent Brigham Hospital.

* This study was aided by a grant from the Proctor Fund of the Harvard Medical School for the study of chronic disease.

1 Murphy W P and Powers J H. The Value of Liver in the Treatment of Anemia Due to Hemorrhage. Surg Gynec Obst 48: 480 (April) 1929.

2 Murphy W P, Lynch R and Howard I M. The Value of Determinations of the Iron Content of Whole Blood to be published.

Kennedy's³ procedure for determining the amount of iron contained in whole blood and found that this factor remains within singularly narrow and standard limits for normal adults. Any reduction of the blood iron below this level is indicative of anemia and, in fact, may be present before other symptoms can be detected. Consequently this factor is regarded as the most accurate criterion that has yet been devised for evaluating the true status of a patient with secondary anemia.

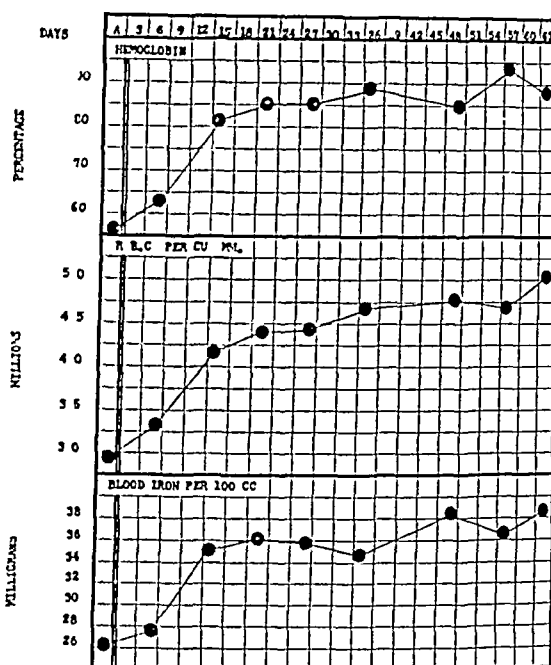


Chart 2 (case 11, table 2).—This patient was treated with iron and whole liver.

METHODS OF STUDY

Twenty-four patients were observed. For the purpose of comparative studies they were divided into four groups of six each. The patients in the first group received iron alone in the form of pills of ferrous carbonate, U S P, 18 Gm daily. The second group received iron plus whole liver, from 100 to 240 Gm daily. The third group received liver extract⁴ alone (three vials daily) for from three to seven weeks, after which iron (18 Gm) was administered in conjunction with the liver extract. The patients in the fourth group, after a similar control period on liver extract alone, were given in addition to the extract relatively small amounts of whole liver (from 90 to 120 Gm daily) to determine whether or not these substances exert any synergistic effect on each other. Whipple⁵ has suggested that small amounts of whole liver when given with liver extract may have such an effect.

The blood of each patient was studied at approximately weekly intervals by the following methods. Test tubes were prepared by evaporating to dryness therein 2 cc of a 16 per cent solution of sodium oxalate. Ten cubic centimeters of venous blood was withdrawn and placed in one of these prepared tubes, which was gently tilted back and forth several times to insure complete solution of the oxalate. (At this point in the procedure

3 Kennedy R P. The Quantitative Determination of Iron in Tissues. J Biol Chem 74: 385 (Aug) 1927.

4 Liver extract No 343 (N N R) Eli Lilly & Co.

5 Robscheit Robbins F S and Whipple G H. Blood Regeneration in Severe Anemia. J Exper Med 49: 215 (Feb) 1929.

it was considered important not to shake the tube in order that hemolysis and the formation of air bubbles might be avoided) Standardized pipets were filled from this oxalated blood and the erythrocytes were counted in standardized chambers Determinations of the percentage of hemoglobin were also made from this sample by the method of Sahli as modified by Osgood and

The patients who received iron alone or in combination with whole liver improved most rapidly The erythrocyte count, the percentage of hemoglobin, and the iron content of the blood responded promptly after treatment was instituted (tables 1 and 2) Improvement was persistent and constant until all three factors had attained their normal levels In the inter-

TABLE 1—Individual Determinations of the Red Blood Cell Count, the Percentage of Hemoglobin and the Blood Iron of Six Patients Treated with Iron Alone *

	Control	First Week	Second Week	Third Week	Fourth Week	Fifth Week	Sixth Week	Seventh Week	Eighth Week	Ninth Week	Tenth Week	Eleventh Week	Twelfth Week
Case 1													
Red blood cells	4 08	4 03	4 65	5 00	5 00	4 93	4 09				5 31		
Hemoglobin	50	37	56	69	74	76	77				84		
Iron	19 4	26 0	33 2	40 7	35 5	39 4	40 0				41 8		
Case 2													
Red blood cells	4 46	4 98	4 03	5 17	5 09			5 20	5 10		5 09		5 14
Hemoglobin	38	49	63	65	68			79	83		88		94
Iron	18 1	22 1	23 4	26 1	27 5			36 0	36 5		37 8		37 5
Case 3													
Red blood cells	3 89	4 01	4 97	4 74	4 74	4 64	4 30						4 36
Hemoglobin	50	68	69	77	77	80	74						87
Iron	28 0	33 3	30 4	36 1	42 2	41 3	43 5						41 4
Case 4													
Red blood cells	4 09	3 89	4 26		4 64				5 00				
Hemoglobin	48	48	59		67				83				
Iron	21 3	23 9	23 9		38 5				39 0				
Case 5													
Red blood cells	2 96	3 60		4 64									
Hemoglobin	53	70		84									
Iron	23 2	30 6		44 0									
Case 6													
Red blood cells	2 16		2 43				3 33	3 88	4 09				
Hemoglobin	50		31				72	84	83				
Iron	16 1		21 7				33 2	35 1	31 0				

* The erythrocyte count is expressed in millions per cubic millimeter and the blood iron in milligrams per hundred cubic centimeters of whole blood

TABLE 2—Individual Observations on Six Patients with Chronic Secondary Anemia Who were Treated with Iron and Whole Liver

	Control	First Week	Second Week	Third Week	Fourth Week	Fifth Week	Sixth Week	Seventh Week	Eighth Week	Ninth Week	Tenth Week	Eleventh Week	Twelfth Week
Case 7													
Red blood cells	2 96	3 33		3 94	4 37	4 14	4 06	4 56	4 09				4 56
Hemoglobin	49	64		74	75	74	79	77	75				81
Iron	26 6	28 3		26 8	34 9	35 0	37 5	39 3	37 3				37 0
Case 8													
Red blood cells	3 03				4 20	4 03	5 03	5 05	4 73	4 83		4 88	4 81
Hemoglobin	33				62	54	60	73	80	82		86	96
Iron	17 6				23 4	24 6	27 8	30 0	33 4	34 2		36 9	41 1
Case 9													
Red blood cells	3 85	4 29	4 02	4 73	4 49	6 03		5 23					
Hemoglobin	23	50	60	70	70	73		80					
Iron	16 9	21 6	23 9	23 8	28 5	37 2		36 7					
Case 10													
Red blood cells	3 98	4 10	4 57	4 77	4 89	5 03		5 70					
Hemoglobin	40	43	50	63	63	63		63					
Iron	19 0	20 1	23 0	26 0	30 2	34 3		35 0					
Case 11													
Red blood cells	2 96	3 32	4 70	4 41	4 44	4 71		4 78	4 74	5 01			
Hemoglobin	56	63	82	85	83	89		85	94	93			
Iron	26 3	27 5	33 3	36 1	33 9	34 5		35 5	36 4	35 6			
Case 12													
Red blood cells	3 36	3 69	3 77	4 06	4 06	4 67	4 14				4 74		
Hemoglobin	71	73	76	83	83	86	90				93		
Iron	28 3	30 3	31 3	33 9	34 3	35 0	33 3				41 4		

Haskins ⁶ The content of iron was determined by the procedure suggested by Kennedy, ³ because of the advantages of this method over that of other investigators

RESULTS

The results obtained by each method of treatment are tabulated separately A typical case in each group is presented in graphic form in the accompanying charts

⁶ Osgood E. E. and Haskins H. D. A New Permanent Standard for Estimation of Hemoglobin by the Acid Hematin Method J Biol Chem 57: 107 (Aug) 1923

pretation of the iron figures, 37 mg of iron per hundred cubic centimeters of blood may be regarded as the lower limit of normal ²

The patients who received liver extract alone showed no appreciable change in the percentage of hemoglobin or the blood iron In a few instances the erythrocyte count improved slightly After the addition of iron, however, all three factors increased in a very satisfactory manner (table 3) When the liver extract was supplemented by small amounts of whole liver, improvement was apparent but less striking than when iron was

TABLE 3—Observations on Six Patients to Whom Liver Extract Plus Iron were Given *

	Control	First Week	Second Week	Third Week	Fourth Week	Fifth Week	Sixth Week	Seventh Week	Eighth Week	Ninth Week	Tenth Week	Eleventh Week	Twelfth Week
Case 11													
Red blood cells	4 88	4 27	4 77	4 07	4 80	4 51	4 99						
Hemoglobin	43	40	44	42	47	43	44						
Iron	21 0	21 7	2 1	22 2	21 "	19 2	20 2						
Red blood cells	4 09	4 00	5 19	4 87			5 24					5 30	
Hemoglobin	44	47	66	79			94					87	
Iron	20 2	28 2	29 8	41 7			43 ,					41 6	
Case 14													
Red blood cells	70	4 10	3 84	4 2									
Hemoglobin	38	16	37	50									
Iron	21 2	22 7	21 3	21 6									
Red blood cells	4 2	4 11	4 10	4 80	4 01	4 49	4 80					4 30	
Hemoglobin	50	77	74	70	6	74	76					74	
Iron	23 6	29 9	30	3 7	3 1 9	40 3	41 1					44 4	
Case 15													
Red blood cells	3 30	3 0	3 30	3 49									
Hemoglobin	53	4	47	44									
Iron	26 2	21 3	6 3	2 3									
Red blood cells	4 42	3 52	4 20	4 67			5 04	5 12				5 24	
Hemoglobin	44	48	62	60			72	64				81	
Iron	2 0	2 3	3 5	3 4			41 0	37 4				39 9	
Case 16													
Red blood cells	3 00	2 2		3 10	3 59	4 00							
Hemoglobin	"	6		60	60	62							
Iron	32 0	1 3		27 1	20	31 4							
Red blood cells	4 00	4 00		5 19	4 03								
Hemoglobin	62	61		77	84								
Iron	31 4	31 6		6 0	4 7								
Case 17													
Red blood cells	3 38	2 71	3 09	3 19	3 48	3 45							
Hemoglobin	11	41	1	42	47	50							
Iron	19 9	16 5	11 7	23 6	24 0	24 2							
Red blood cells	4 48		4 75										
Hemoglobin	50		60										
Iron	24 2		27 3										
Case 18 †													
Red blood cells	4 88	4 65	4 80	4 76	4 90		4 16	4 73					
Hemoglobin	1	56	61	64	77		74	80					
Iron	24 9	27 5	28 3	30 0	0 0		41 1	41 9					

* The first group of figures in each case represents the control period on liver extract alone. The second group indicates the improvement that occurred after the administration of iron in addition to the extract.
† Figures denote improvement.

TABLE 4—Individual Observations on Six Patients to Whom Liver Extract and Whole Liver were Administered *

	Control	First Week	Second Week	Third Week	Fourth Week	Fifth Week	Sixth Week	Seventh Week	Eighth Week	Ninth Week	Tenth Week	Eleventh Week	Twelfth Week
Case 19													
Red blood cells	3 00	3 00	3 2	3 11		3 10							
Hemoglobin	4	47	4	47		42							
Iron	21 1	20 7	22 8	21 2		21 4							
Red blood cells	3 30	3 43	4 40	4 09	4 51	4 10	4 0	4 58	4 80				4 88
Hemoglobin	42	39	48	48	5	62	69	69	90				80
Iron	21 4	23 4	29 9	0 3	39 6	31 6	29 4	39 1	30 6				30 3
Case 20													
Red blood cells	2 38	3 21	3 04	3 09									
Hemoglobin	19	46	52	54									
Iron	23 0	23 6	23 1	28 0									
Red blood cells	3 69	4 11	3 80	4 64	4 70	4 68			4 80	4 96	5 31	4 49	
Hemoglobin	51	6	67	62	60	68			73	73	88	87	80
Iron	28 0	28 7	27 8	28 1	27 5	30 0			31 9	30 1	38 7	39 9	
Case 21													
Red blood cells	3 40				3 88	3 95							
Hemoglobin	57				73	73							
Iron	36 0				33 3	36 1							
Red blood cells	3 98	4 42	4 94	4 20	4 74	4 4	4 60					4 23	
Hemoglobin	73	78	82	77	81	78	81					87	
Iron	36 1	35 8	37 5	3 3	40 0	41 9	39 7					38 4	
Case 22													
Red blood cells	3 26	4 31	4 46	4 29	4 12								
Hemoglobin	48	46	47	44	41								
Iron	21 0	21 3	21 1	21 8	21 0								
Red blood cells	4 12	3 84	3 88	4 0	4 31	4 62	4 63	4 71	5 09	5 16	5 18	5 13	5 30
Hemoglobin	41	41	48	62	53	51	59	50	48	64	68	82	91
Iron	21 9	18 2	20 0	19 2	21 7	29 2	22 5	22 9	21 9	24 0	32 9	38 4	41 1
Case 23													
Red blood cells	3 13	3 67	4 02	4 21	4 44								
Hemoglobin	69	79	81	88	87								
Iron	30 1	34 5	38 7	33 3	37 8								
Red blood cells	4 44	4 26	4 47	4 69	4 78	4 71	4 50		5 16			4 76	
Hemoglobin	87	84	91	8	84	87	91		89			97	
Iron	37 8	34 1	37 0	33 7	32 6	38 4	39 2		40 3			43 0	
Case 24													
Red blood cells	4 68	4 10	4 34	4 7	4 33								
Hemoglobin	51	48	38	45	48								
Iron	19 5	19 8	18 7	18 3	19 4								
Red blood cells	4 33	4 21	4 76	4 46		4 39	4 42	4 46	4 14				
Hemoglobin	48	49	48	49		48	49	48	50				
Iron	19 4	19 7	19 9	20 0		21 6	20 6	21 1	24 0				

* The first group of figures in each case represents the control period on liver extract alone. The second group demonstrates the effect of the addition of whole liver.

used in conjunction with the extract (table 4) In tables 3 and 4 the first group of figures in each case represents the changes in the blood that occurred in the interval during which liver extract alone was administered The second group records the improvement that followed the addition of either ferrous carbonate or whole liver The effect of iron or of liver was not increased by the simultaneous administration of liver extract

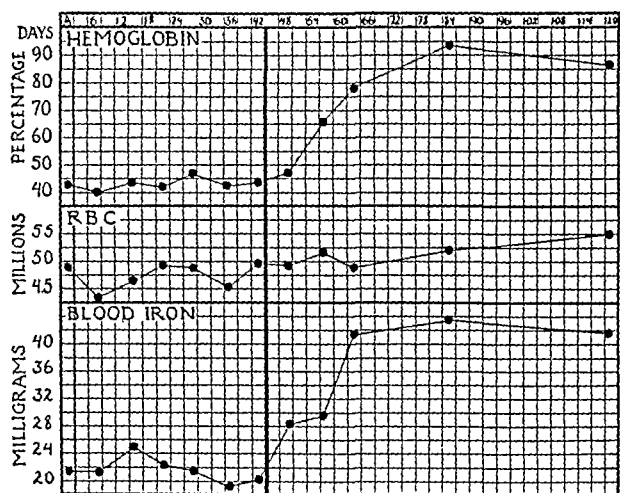


Chart 3 (case 13, table 3)—This patient was treated with liver extract and iron. The single vertical line at the left indicates the beginning of treatment with liver extract. Marked improvement is apparent after the administration of iron (indicated by the double vertical line).

Although the observations on the percentage of hemoglobin and the red blood cell counts are of considerable interest, the figures for blood iron offer a much more accurate criterion for evaluating the results than do either of the other two factors. When the iron content of the blood failed to increase from week to week under appropriate treatment, and in some instances

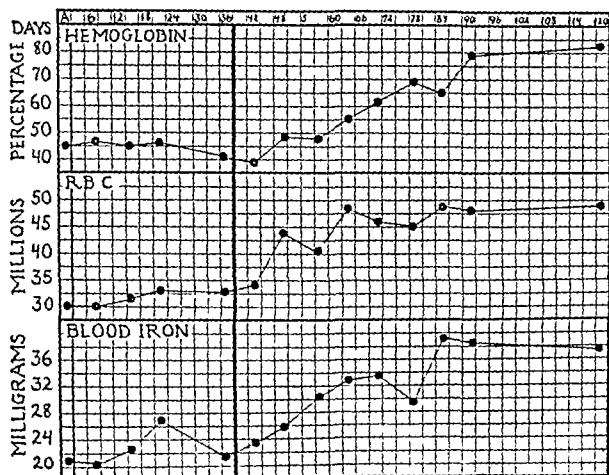


Chart 4 (case 19, table 4)—This patient was treated with liver extract and whole liver. The single vertical line at the left indicates the beginning of treatment with liver extract. The addition of liver is indicated by the double vertical line.

actually decreased the cause was usually apparent in the fact that the patient had had a recent menstrual period. In other words, this determination is sufficiently sensitive to detect even the slight temporary anemia that occurs during the normal menstrual cycle. That such variations in the blood iron actually do occur under

these circumstances is apparent from the foregoing observations.

CONCLUSION

Patients with secondary anemia due to chronic hemorrhage or chronic chlorosis respond very favorably to treatment with iron in the form of ferrous carbonate. They respond equally well when whole liver is given in conjunction with iron.

Liver extract is of no value in the treatment of these types of chronic secondary anemia. The effect of iron or of whole liver is not increased by the simultaneous administration of liver extract.

311 Beacon Street

AGRANULOCYTOSIS

REPORT OF A CASE WITH A TERMINAL GAS BACILLUS INFECTION *

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During the eight years since Weiner Schultz of Berlin first gave the name "agranulocytosis" or "agranulocytic angina" to a group of cases that have a severe ulcerative and gangrenous stomatitis and a neutrophil leukopenia with a relative lymphocytosis, many cases have been reported, chiefly by German and American observers. The literature dealing with this peculiar phenomenon has been repeatedly and comprehensively reviewed to date. Many clinicians regard agranulocytosis as a hitherto undescribed disease entity, but numerous writers maintain that the picture described by Schultz is not specific and hold to the view that so-called agranulocytosis simply constitutes a type of leukopenic reaction to an overwhelming infection. Whatever the view, there are features in the reported cases sufficiently striking, uniform and frequent to warrant separate group consideration.

Cases are common to the two sexes with an incidence of about 70 per cent in females, and they occur in all age groups, the average age being about 40 years. The majority of cases have an acute onset in a period of good health. There is a high continued fever from 102 to 104 F, and profound prostration is common. Other prominent symptoms are sore throat, malaise, chills and dysphagia. Necrotic or ulcerative processes have been observed almost constantly in various parts of the oral cavity, and not infrequently lower in the gastro-intestinal tract, in the cervix and the vagina, and on the cutaneous surfaces. Occasionally the spleen and liver are enlarged. In about one half of the cases, jaundice develops as the disease progresses. Examination of the heart and lungs is negative in the beginning, but death is often preceded by a terminal pneumonia. A terminal gas bacillus infection, such as occurred in the case here reported, appears to be entirely unique. However, Talley and Griffith¹ record a case in which a clinical diagnosis of gas bacillus infection was made and *B. anthracis* serum given on account of a rapid swelling of the hand and arm with bluish discoloration and formation of vesicles. The infection apparently started from a cut in the palm of the hand received before admission. Smears and blood cultures failed to

* From the Department of Medicine, University of Tennessee College of Medicine.
1. Talley, J. E. and Griffith, G. C. A Discussion of Six Cases of Agranulocytosis. *Am. Clin. North America* 13: 1079-1090 (Jan.) 1930.

confirm the diagnosis. Trace² also mentions a case in which gas bacillus infection of the arm was suspected but not proved. The course of the disease is usually acute and death occurs in from four to eight days, the extremes being from two to forty-two days. Periods of temporary improvement sometimes take place, but death may be expected to ensue in approximately 90 per cent of the cases.

The outstanding pathognomonic characteristic of this highly fatal disorder is the unusually striking blood picture. A leukopenia at the onset of the disease is the rule, the total leukocytes often being reduced to 1,200 or less per cubic millimeter. Polymorphonuclear leukocytes either are entirely absent or constitute less than 6 per cent of the white cells. The lymphocytes are always relatively increased, sometimes up to 100 per cent. An important feature of the blood examination is the maintenance of a normal red cell count and hemoglobin percentage. A few cases develop a mild secondary anemia late in the disease. The platelet count also is usually within normal limits and the bleeding and coagulation time is normal. Blood cultures are generally sterile, and in the few cases with positive blood culture (about 10 per cent) there is no uniformity of invading organism.

In this disease the bone marrow as well as the blood picture is characteristic. It is usually pinkish or red. Lymphoid cells are present mainly, and erythroblasts and megakaryocytes are normal. Granulocytic elements are almost completely absent. Cell-poor marrow is a fairly consistent finding at autopsy, but the hypoplasia of granular cells has also been found in bone marrow during the height of the disease and is therefore not a terminal event.

The etiologic agent has as yet not been determined. Whether the condition is the result of endocrine disturbance, whether it belongs in the groups of the acute leukemias or whether it is an infectious disease that especially affects the granulocytic system remains a matter of wide conjecture. A variety of organisms has been recovered from the blood stream and local lesions, but in many instances pathogenic organisms have not been found. From the blood, hemolytic streptococci, staphylococci, *Bacillus pyocyaneus*, *B. coli*, pneumococci and *Streptococcus viridans* (Cannon) have been recovered. From oral lesions, Klebs-Loeffler bacilli, Vincent's spirochetes and fusiform bacilli, pneumococci, *B. pyocyaneus* and streptococci of various types have been isolated. However, no definite causative factor has been determined, as the bacteriology is without uniformity, and the lack of demonstrable blood stream infection becomes a significant negative finding. The disease not infrequently follows the extraction of teeth, and a few cases have followed antisyphilitic treatment with the arsphenamines.

In the differential diagnosis of agranulocytosis, acute poisoning, such as from arsenic, benzene, thorium and roentgen rays, acute leukemia and leukemic leukemia, unusual cases of anemia, and sepsis may all produce similar anatomic and blood changes. In its early stages the disease often prades under the guise of diphtheria, Vincent's angina or so-called septic or streptococcal sore throat.

Therapy is of necessity largely symptomatic, since the etiology remains obscure. Local treatment is directed toward alleviation of sore throat and pain by

frequent gargling and various antiseptic applications. General treatment includes the usual supportive care and an attempt to maintain nutrition. There is no specific therapy, but frequent blood transfusions, intra venous administration of neoarsphenamine, and stimulating doses of x-rays are used in an attempt to stimulate the bone marrow.

In the foregoing paragraphs the salient features of this highly fatal malady are briefly mentioned. Whether agranulocytosis represents a particular biologic type of hematopoietic reaction to infection or is a distinct disease entity, it certainly robs the body of its defensive mechanism and leaves it an easy prey to severe infection, as the accompanying case report illustrates. The case here presented conforms in its clinical and pathologic features with the majority of the reported instances of agranulocytosis from its initial onset up to the onset of the terminal gas bacillus infection four teen hours before the death of the patient. From that point on, it is seemingly without parallel in the literature.

REPORT OF CASE

History—Mrs. H. J. H., aged 26, married, had been in good health until the morning of June 29, 1930, when she awoke complaining of sore throat, general itching and soreness. During the day her temperature rose to 101 F. For the next two days her symptoms were unchanged. The fourth day she felt better, her temperature was normal, and she was able to be up part of the time although she still complained of sore throat. The next day her temperature was 103 F., her throat was more painful and she was greatly prostrated. From this time on her condition grew progressively worse. When she was brought to the hospital on the seventh day, her temperature was 104 and her pulse was 130. The lungs were apparently normal. The abdomen was moderately distended and the spleen and liver were not palpable. There was no jaundice. In addition to the sore throat she now had discrete superficial ulcers on the hard palate and around the gum margins. Smears from these showed the presence of Vincent's spirilla and spirochetes. The blood count was as follows: hemoglobin, 73 per cent; red blood cells, 4,200,000; white blood cells, 2,975; polymorphonuclear neutrophils, 8 per cent; small lymphocytes, 68 per cent; large lymphocytes, 3 per cent; metamyelocytes, 1 per cent. The next morning the leukocytes were 1,450, with polymorphonuclear neutrophils, 4 per cent and lymphocytes, 96 per cent. Blood platelets were 130,000.

She was now given a light roentgen treatment over the long bones, the sternum and the jaws. A few hours later she was given a transfusion of 500 cc. of whole blood without any reaction resulting. Just before the transfusion she was given 0.3 Gm. of neoarsphenamine intravenously.

Her temperature ranged from 104 to 105 F. all that night and about 5 a. m. she began to complain of severe pain in the upper part of the right thigh. The pain was of such severity that a gram (0.065 Gm.) of pantopium hydrochloricum in two hours had no effect, and she was finally given 1/100 grain (0.6 mg.) of scopolamine and one half grain (0.03 Gm.) of morphine before she was quieted. Examination of the thigh at first showed no swelling or discoloration but it was tender to deep pressure. There was no change in the condition of the mouth. The blood count was now as follows: hemoglobin, 85 per cent; red blood cells, 4,380,000; white blood cells, 1,850; polymorphonuclear neutrophils, 35 per cent; lymphocytes, 65 per cent. Another blood transfusion was now decided on but was not given for, on intertyping the blood with that of nine prospective donors a most unusual phenomenon was observed. The patient's cells were rapidly and completely hemolyzed by the serum of each and every donor tried while the donor's cells were not affected by the patient's serum.

About eight hours after the onset of the pain in the hip an area of bluish discoloration about 4 by 8 inches appeared on the outer aspect of the thigh just above the knee. In a little while a similar area, though smaller, appeared on the calf. With the appearance of these discolorations the thigh began

² Trace, I. M. Agranulocytic Angina. Illinois M. J. 55: 36-38 (Jan.) 1929.

to swell, and in a short time the entire leg was greatly swollen and had become cold and stiff. No pulsations could be felt below the femoral artery. Soon after the swelling appeared definite crepitation could be made out on deep pressure over the discolored areas. A roentgenogram of the thigh showed no bony changes, but the soft tissues showed air infiltration both deep and superficial. At the time of the patient's death, fourteen hours after the onset of the pain, the crepitation and discoloration had extended upward to the level of Poupart's ligament, the crest of the ilium and the upper margin of the right gluteal muscles posteriorly. In the meantime, large purplish blebs had appeared on the posterior aspect of this thigh.

Autopsy—The autopsy was done about two hours after death. The essential observations were as follows. There were dirty grayish ulcers around the gum margins of the right lower molar teeth, on the hard palate and on the tonsil pillars. The lungs were normal, except for a small area of pneumonic consolidation in the right lower lobe. The heart was normal except that a considerable amount of gas escaped when the right auricle was punctured to obtain blood for culture. The blood obtained was frothy. The intestines were moderately distended but there was no evidence of peritonitis. In the lower end of the ileum about 3 inches from the ileocecal valve there was a dry grayish, somewhat elevated and necrotic-looking Peyer's patch about 1 inch in diameter. The serosa covering it was quite red but no evidence of perforation could be found. The adjacent mesenteric glands were not enlarged. On the anterior wall of the ampulla of the rectum there were two superficial grayish ulcers about 1 cm in diameter. The serosa covering these was also greatly injected but again no evidence of a perforation could be demonstrated. Directly opposite these ulcers on the adjacent posterior wall of the uterus was a similar circumscribed area of redness. The right tube and ovary were enlarged and crepitant. The left adnexa were normal. The uterus was normal in size and appearance and the endometrium was normal. No ulcerations were found in the vagina, and the cervix was smooth and normal. The liver was normal in size and appearance. The spleen was about twice normal size, was soft and the cut surface was such as is usually seen in the presence of an acute infection. A specimen of bone marrow from the right femur was pale red in appearance and smears showed a remarkable scarcity of cells. No polymorphonuclear cells of any kind were seen and only an occasional myeloblast.

The most remarkable changes were found in the right leg which was greatly swollen and which had apparently increased in size after death. The outer aspect of the thigh extending to the crest of the ilium had a mottled bluish appearance. On the posterior surface were two large blebs, each about 3 inches in diameter, and both surrounded by large irregular areas of ecchymosis. These blebs contained a clear wine colored fluid. When the leg was punctured there was an audible escape of gas, which readily ignited. A careful search was made for a portal of entry for the gas bacillus but the skin was intact everywhere. The muscles had the peculiar dark bruised appearance usually seen in cases of gas gangrene. Cultures were made from the throat, the heart blood, the blebs on the thigh and the muscles of the thigh, all of which showed the presence of the gas bacillus in large numbers.

COMMENT

This case is unique first, because of the terminal gas bacillus infection and secondly, because the portal of entry for the gas infection was never determined. There was certainly no reason to believe that the gas bacillus entered through the skin. Since this organism is commonly found in the intestinal tract a careful search was made for a portal of entry here. Assuming that it entered through the intestinal ulcers this would not explain why the gas infection was practically limited to the right leg. The absence of vaginal ulcers and of any cervical or uterine lesion is sufficient to exclude the genital tract as the primary source.

20 South Dunlap Street

THE CHEST IN RACHITIC CHILDREN

A ROENTGENOLOGIC STUDY *

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During the past five years all cases coming to the roentgen laboratory of the Children's Hospital for examination of the chest that showed signs of rickets, such as a rosary or a deformity of the chest, have been collected for study. Information on the incidence of pneumonia and atelectasis, the type of pneumonia usually encountered, the prognosis and the differential diagnosis of pneumonia and atelectasis was especially sought. In cases of suspected pneumonia in infants and young children showing a rachitic rosary with deformity of the chest, the differentiation between atelectasis and pneumonia is sometimes difficult. An effort was made to study the usual roentgenographic distribution of atelectasis and to reach some conclusion that would be an aid in the differential diagnosis.

Seventy-eight patients were studied, divided into three groups: the first, thirty-one in number, which showed a rosary in the roentgenogram but which exhibited at no time any evidence of pneumonia or a chest deformity; the second, twenty-four cases which showed a rosary in the roentgenogram and presented roentgenographic and clinical evidence of pneumonia but with little or no chest deformity; and the third group, twenty-three cases, with marked chest deformity with or without pneumonia. In the first group there were twenty-four Negro and seven white children, three of the latter being Italians; in the second, there were twenty-one Negroes and three Italians; in the third consisting of twenty-three children, all were Negroes.

In the first group, ranging from 5 months to 4 years of age, a large proportion were admitted to the hospital with a diagnosis of acute bronchitis and showed no evidence in the roentgenograms of any pneumonic process. Two deaths occurred in this group: one from intussusception and the other from an unknown cause, it being impossible to obtain an autopsy. In several cases, although no definite depression of the chest was present, there were shadows running parallel to the heart and mediastinal shadows, which were suggestive of the so-called atelectatic strips later to be described. No deaths were directly or indirectly attributable to rickets and the study of this group bears out the statements of Hess,¹ Park and Howland,² and others that rickets with lesser chest changes is not dangerous to life.

In the second group, those cases showing a rosary with little or no chest deformity, the ages of the children ranged from 5 to 26 months. No cases were included in this group in which there was a definite recorded note of well marked chest deformity. Of the twenty-four patients five died, a mortality of 20.8 per cent. Fourteen showed roentgen evidence of bronchopneumonia and ten showed lobar pneumonia. Of the lobar pneumonia patients two had a complicating

* From the Roentgen Laboratory of the Children's Hospital.

* Read before the Section on Radiology at the Eighty-first Annual Session of the American Medical Association, Detroit, June 27, 1930.

1. Hess, A. F. Rickets Including Osteomalacia and Tetany. Philadelphia, Lea & Febiger, 1929.

2. Park, E. A. and Howland, J. The Dangers to Life of Severe Involvement of the Thorax in Rickets. Bull. Johns Hopkins Hosp. 32: 101-109 (April) 1921.

emphyema. The cause of four deaths was bronchopneumonia and the fifth was caused by lobar pneumonia followed by emphyema.

The last group included patients showing marked deformity either clinically or in the roentgenograms. Several, with very little actual deformity apparent in the roentgenograms, presented a markedly streaked or moth-eaten appearance of the ribs with clinical notes of dyspnea, respiratory difficulty or apparently deficient aeration of the lungs. Of the twenty-three patients in this group all of whom were Negroes twelve died, a mortality of 52.1 per cent. Thirteen had clinical and roentgen evidence of bronchopneumonia and three had lobar pneumonia. Of the patients with bronchopneumonia, nine died; of those having lobar pneumonia, two died. The ages ranged from 5 to 15 months except in one case of lobar pneumonia, which occurred in a child of 4 years who had rickets in an advanced stage of healing, with a persistent chest deformity. The recurring death was apparently caused, as stated in the clinical record, by deficient aeration of the lungs, depression of the chest wall and extreme abdominal distention. An autopsy was obtained in this case.

When the chest was opened at autopsy, it was found to be very narrow and constricted in its anterior portion. This narrow anterior part was occupied almost entirely by the heart, which lay in a central position. At about the middle of the ribs was a forward angulation, the angle being so acute that practically no space was left in the pleural cavity. About two thirds of the left lung was dark, bluish and of rubbery consistency, due to atelectasis. The surrounding edges anterior and posterior, were emphysematous. The edges were sharply demarcated from the emphysematous portions. The atelectatic areas corresponded with the depressions formed by the bent-in chest wall at the site of the rosary. The entire middle lobe of the right lung was atelectatic. No mention was made in the autopsy record of the presence of any areas of bronchopneumonia.

THE RACHITIC CHEST

The deformities of the thorax produced by rickets have been fully described by Hess, Park and Howland and others. The earliest change noted in the roentgenogram is the beading of the ribs or the rosary, which is shown by the saucer-shaped margins of the sternal extremities. This sign cannot always be used as evidence of early rickets. Hess has pointed out that the rosary is not apparent in the roentgenogram until rickets is often well advanced. Again, the rosary is not always caused by rickets alone. Hess and Ungcr³ have shown that it can be caused by infantile scurvy, but in the latter it is angular rather than round and knobby as in rickets and is due to actual infarctions at the costochondral junctions. The beading in rickets is usually manifested in the roentgenogram by more or less prominent cupping, causing the saucer depression of the anterior chondral extremities of the ribs. These shadows must not be mistaken for infiltration and abnormal densities in the lungs themselves.

In mild cases this is the only noticeable change. In the severe cases, before healing has begun, the ribs have a moth-eaten streaked appearance, the cortex is much rarefied, and it casts only a faint shadow in the roentgenogram. It seems quite probable that this extreme rarefaction is the cause of the pliability and yielding of the chest wall, which can be demonstrated when pressure is

exerted on it during clinical examination. In my series of cases it was difficult to prove this, as the presence or absence of pliability of the chest wall was not a routine observation on all of the clinical records.

The chest may be misshapen in several different ways. In the majority of cases there was no deformity of the chest wall, merely an uncomplicated rosary being present. In a few patients, in addition to the rosary, the ribs were curved inward at the level of the seventh or eighth ribs. This was usually bilateral. In other cases the upper half of the thorax had an appearance as though compressed while the lowermost ribs flared out; the anterior portions being affected, and their parallel arrangement was lost. The interspaces became progressively wider as the lower ribs were reached. In other patients the chest remained narrow throughout its length. Pathologic fractures of the ribs were frequently found, the displacement of the fragments producing an irregularly indented appearance of the thoracic cage.

In very severe cases the chest may be so deformed that pressure is exerted on the lungs and the thoracic blood vessels leading to disturbances in respiration and circulation. Park and Howland² have described such deformities occurring in Negro babies, a condition which constitutes a grave menace to life. They studied twenty-two children between the ages of 8 months and 4½ years. All the children of their series exhibited well marked deformities of the thorax. In addition there was present what is considered by the authors the essentially dangerous element, great weakening of the chest wall.

They describe the shape of the chest wall as similar to a blunt wedge the sternum and the adjacent portions of the costal cartilages corresponding to the narrow end of the wedge. Deep bilateral hollows in the chest wall correspond to the sites of the costochondral junctions. The deepest part of the depression lies at the sixth or seventh costochondral junctions. The depression on the right side is in most cases larger than the one on the left, which they think is caused by the fact that the heart furnishes support to the thoracic wall on the left side. In the less severe cases there may be no depression on the left side but only flattening of the normal arch of the chest. The posterior angles of the ribs that form the depression are much more bent than normal and form a rounded ridgelike elevation 3 or 4 cm. broad, which projects laterally and sharply separates the back from the anterolateral surface of the chest.

This deformity, however, is not believed by them to be the essentially dangerous condition. The weakness of the chest wall is the real menace to life. They point out that the diaphragm can act only to advantage when its points of attachment are fixed and remain firm. In the weakened thorax of rickets, the diaphragm expends part of its energy in drawing its own points of attachment inward. In so doing it diminishes the extent of its descent and impairs, by just so much, its powers to increase thoracic space. Owing to the deformity of the thorax, the diaphragm must tend to remain, even in expiration in a state of partial inspiratory contraction. When inspiration takes place it must commence its contraction from a position of partial contraction and is able, therefore, to accomplish only part of its work, which, as a muscle in a state of normal relaxation at the outset, it would be capable of accomplishing. It is quite possible, they also believe, that the contractile power of the diaphragm is impaired as a result of the rickets itself.

³ Hess, A. F. and Ungcr, L. J. Scorbatic Beading of the Ribs. *Am. J. Dis. Child.* 19: 331 (May) 1920 quoted by Hess (footnote 1)

As a result of this impairment of the function of the diaphragm due to the weak chest wall, Park and Howland believe that a definite clinical picture results. The temperature of the patients with this condition is not greatly elevated and sometimes remains normal, the respirations are greatly increased, never less than 60



Fig 1 (group 2)—Extensive bilateral bronchopneumonia occurring in a patient having only a mild rosary with no marked rachitic involvement of the ribs

and sometimes rising to 80 and 100 a minute. The leukocyte count is low. The presence of infection is entirely subsidiary, the loss of rigidity of the thoracic frame, the result of the rickets, is the dangerous element. The autopsy record just quoted is an excellent illustration of this type of case.

ROENTGEN APPEARANCE OF THE RACHITIC CHEST

In the first group of cases the rosary was shown in the roentgenogram in the usual manner, the width of the cup-shaped sternal ends of the ribs depending on the degree of rachitic involvement. In three of the cases there were indistinct striplike shadows of increased density running upward and downward from each hilus. Since obvious deformity of the chest was not present, these shadows could not be regarded with certainty as the usual manifestations of atelectasis. As healing progresses, the cup-shaped ends become denser and more clearly defined.

In the second group of cases, in which bronchopneumonia was present in fourteen and lobar pneumonia in ten, the usual roentgenographic changes of each type were found. In four cases of lobar pneumonia involving the right upper lobe, definite retraction of the heart to the affected side occurred. This displacement of the heart was regarded as an illustration of pneumonia combined with atelectasis, as described by Griffith⁴ Thoenes⁵ and others and occurs in normal children who contract pneumonia. None of the cases of this group showed changes that could be regarded as characteristic of the atelectasis due to rickets.

⁴ Griffith I. P. C. Displacement of the Heart in Pneumonia in Children. *Am. J. M. Sc.* 1-4 448-452 (Oct.) 1927.
⁵ Thoenes Monatschr. f. Kinderh. 23 33 (July) 1922 quoted by Griffith ref 4.

In the roentgen picture of the third group of my cases, the ribs were thin and often had the streaked and rarefied appearance previously referred to which indicates weakness of the chest wall. Pathologic fractures frequently caused indentations of the thoracic wall. Scoliosis and kyphosis often increased the deformity of the chest. Of the twenty-three patients of this group, seven definitely showed the central position of the heart such as occurred in the case just quoted in which a postmortem examination was made. Often the heart seemed proportionately larger than the chest. Parallel with the sternum, usually running from the second or third dorsal vertebra, were striplike shadows of increased density in each lung which were caused by atelectasis. These shadows in some cases coincided with those of the rosary, in others the rosary seemed to lie at the outer side of the atelectatic areas. Faulty technique, deviation of the target from the midline of the chest, or rotation of the child on the film can cause such a shift in the positions of the rosary and the atelectatic areas. In many cases the shadow of the atelectatic strip was merged on the left side with the shadow of the heart and so was lost to view.

Scattered throughout the lungs beyond the atelectatic strips were small, more or less circumscribed areas of increased density which were due either to small areas of atelectasis or to small areas of bronchopneumonia. It is practically impossible from a roentgen standpoint to differentiate between these two conditions. Many of the cases of bronchopneumonia showed large dense areas due to confluence of numerous lobular areas of involvement. When a child has a history of tuberculous contacts, has a positive tuberculin reaction and has other signs of tuberculosis, it is very difficult to differentiate between bronchopneumonia or atelectasis

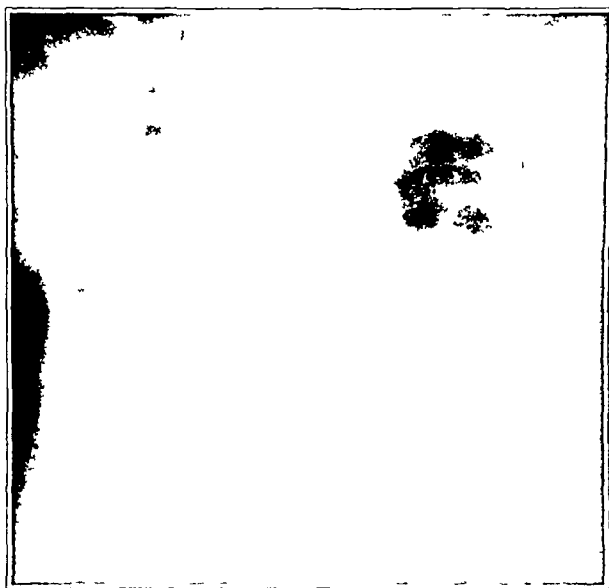


Fig 2 (group 3)—Marked rosary, moderate rachitic involvement of the ribs. Extensive bronchopneumonia and atelectatic strip, right lung. Marked deformity of the chest, especially on the right side, shown on clinical examination.

and tuberculosis. One patient of the third group had in addition to very marked signs of rickets, shown both on clinical examination and in the roentgenogram, a positive tuberculin reaction and also a definite history of contact with tuberculous relatives.

The usual roentgen signs of atelectasis cannot be relied on in cases of rachitic deformity. The heart can be apparently retracted to the right side, as is the case in the typical roentgenogram of atelectasis occurring in the right lung, but this is usually caused in the rachitic chest by the central position which the heart assumes because of the deformity of the thoracic wall. The small scattered areas of atelectasis may be uniformly distributed throughout both lungs and so cause no deviation of the heart to either side.

As Park and Howland have stated the right side of the chest often showed in my series more deformity than the left. It is difficult to gauge accurately the amount of deformity of the chest when only a roentgen can be seen in the roentgenogram and no constriction of the upper chest wall, pathologic fractures or flaring of the lower ribs are present. This is true in roentgenograms in either the anteroposterior or lateral planes. Lateral views are useful in determining whether depression or bulging of the sternum is present. It is more common to find sternal deformities in the late stage of complete healing and they often may remain as residual deformities throughout life.

The change in the appearance of the rachitic chest after healing has begun is striking. This has been observed in cases in which cod liver oil has been given and especially, in my series of cases, in those children who receive ultraviolet ray therapy. The ribs and bones of the shoulder girdle lose their streaked appearance, the upper extremity of the humerus and the scapula show new zones of temporary calcification with well defined osteoid zones, the swollen sternal ends

does not increase the hazard when pulmonary infections occur. None of the patients in the first group, who had a mild or moderate rosary without apparent chest deformity, died from the effect of the rachitic process. Many were examined for a suspected pneumonia, but the roentgen examination proved negative and they were subsequently discharged from the hospital with a diagnosis of acute bronchitis. The mortality rate of

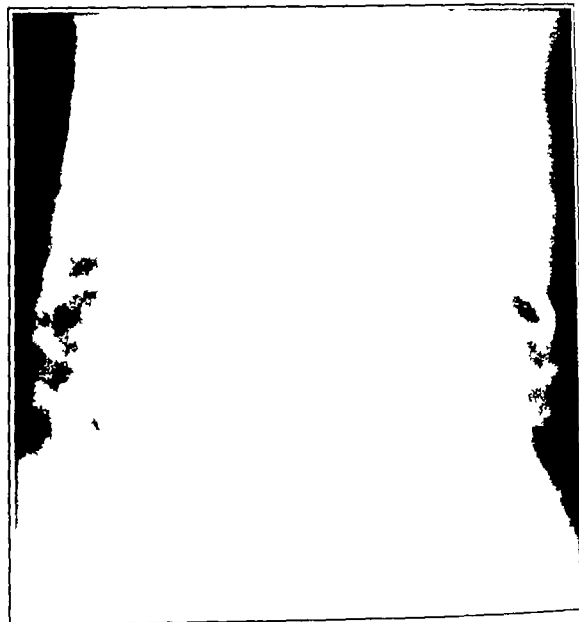


Fig. 4 (group 3)—Marked rosary and chest deformity. Autopsy showed central position of the heart, areas of atelectasis left lung, corresponding to the depression of the rosary. Atelectasis middle lobe of the right lung. Scoliosis and kyphosis.



Fig. 3 (group 3)—Marked rosary and chest deformity. Small area of bronchopneumonia upper right lung. Partial atelectatic strip left lung.

of the ribs cast denser and wider shadows, and even if the deformity remains the bones give an impression of greater strength. With this return of rigidity of the chest wall, the danger from respiratory infection is appreciably lessened.

CONCLUSIONS

The study of this series of cases shows conclusively that mild rachitic involvement of the chest, as has been stated by previous authors, is not dangerous to life and

the second group, which consisted of cases exhibiting a mild or moderate rosary with no deformity, does not seem to be greater than the usual rate found in the average patients admitted to hospitals with pneumonia showing no rachitic involvement of the chest, many of whom often have had prolonged treatment at home until they have reached a grave stage of their illness. The rate rises proportionately with the increase in deformity and especially with the degree of pliability of the chest wall. The case that came to autopsy in my series would seem to prove their statement that deformity and normal thoracic function are compatible, but the loss of rigidity of the chest will so seriously impair the normal function that any infection may prove fatal, however mild it may be. As healing progresses, the thorax regains its rigidity even though deformed and the death rate in this series was consequently much less in the children over 3 years of age. In fact no patients died in the series when pneumonia occurred after healing was well advanced. Rickets is of course well known to be especially prevalent in the Negro race, and almost the entire series was composed of Negroes. The third, or severe, group consisted entirely of Negroes.

The usual type of atelectasis due to rickets as described by Baetjer and Waters⁶ Park and Howland⁷ and others can easily be recognized in the roentgenogram by its characteristic location. The small scattered areas of atelectasis are indistinguishable from bronchopneumonia. The usual signs of atelectasis, as they

⁶ Baetjer, F. H. and Waters, C. A. *Injuries and Diseases of the Bones and Joints*. New York: Paul B. Hoeber, 1921.

occur when the normal chest becomes involved, are of no assistance in the diagnosis of rachitic atelectasis, because the latter is for the most part dependent on the degree of rachitic involvement of the ribs and the amount of deformity of the chest. The absolute differentiation between bronchopneumonia and atelectasis is not of great clinical importance from the standpoint of prognosis. The two are equally dangerous. The roentgenologist can aid the clinician in the prognosis of the probable outcome of the case, the gravity increasing in direct proportion to the degree of rachitic involvement, the deformity being the secondary consideration.

Bronchopneumonia occurs more frequently than lobal pneumonia and is of much greater frequency in the cases exhibiting severe involvement of the ribs and chest deformity.

ABSTRACT OF DISCUSSION

DR WILLIAM A EVANS, Detroit. A proper comprehension of all that has just been heard is dependent on a full knowledge of the mechanics of respiration—that is, what

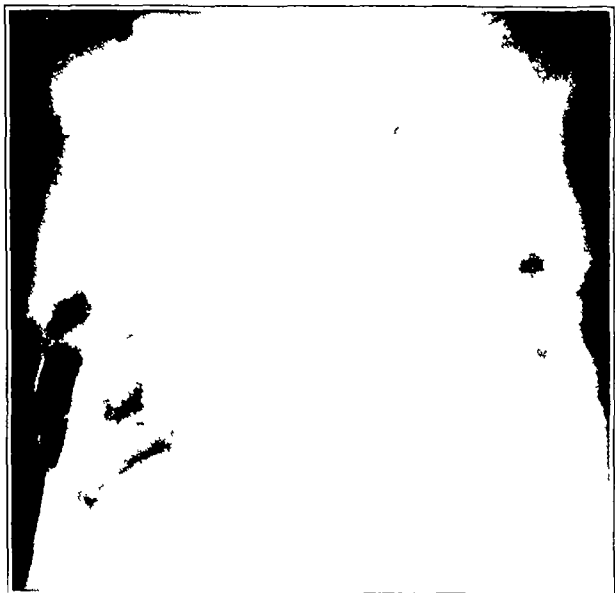


Fig. 5—Marked rosary and chest deformity. Extensive rachitic involvement of the ribs. Fractures of the ribs. Central position of the heart. Scoliosis and kyphosis. Marked atelectatic strips both lungs. Patient died; no autopsy obtained. Probable bronchopneumonia complicating the atelectasis.

certain tissue changes may interfere with this mechanism or what intrathoracic changes may result from improper respiration. The production of all the pathologic signs described by Dr Bromer naturally follows if certain tissue defects are present and respiration is modified thereby. Thoracic deformities occur not primarily because the wall structures are weakened but because of the negative intrathoracic pressure. It is this negative intrathoracic pressure which explains the development of pectus excavatum or funnel chest and makes necessary devices to prevent caving in of the anterior thorax when operation is performed for such a deformity. Owing to this negative pressure the lung constantly clings normally to the thoracic wall and is separated only in the presence of local disease or of some mechanical force. The presence of atelectasis in the new born is explained in part by the insufficient increase in the size of the thorax which occurs at the inception of respiration and the opposite condition occurs when the thorax expands unduly for here one observes points at which the lung is not in contact with the chest wall although it is apparently expanded to its capacity. The high mortality in cases showing extreme weak-

ness of the thoracic wall can be explained by a condition simulating paradoxical breathing. In performing the operation of thoracoplasty, when a certain number of ribs are removed, the weakening of the thoracic wall may be so great that the lung on the operated side goes down in inspiration rather than out and out in expiration rather than down, thus bringing about an interchange of air between the two sides. Such breathing is dangerous and accounted for many deaths in the early days of massive rib resections. Then, too, the atelectasis may result from hypoventilation—the condition of incomplete aeration of the lungs. Muller's observations gave good support to this view. In twenty four operations for gallbladder disease or other abdominal condition, some degree of atelectasis or limited pulmonary consolidation was discovered in practically every case. The pneumonias associated with these terminal conditions result primarily from localized obstructions in the peripheral air passages—that is, atelectasis and pneumonia are closely related in their origin, as they are dependent on occlusions, atelectasis resulting first and then pneumonia developing in this subnormal tissue.

DR RALPH S BROMER Philadelphia. I am glad that Dr Evans brought out the mechanics of respiration as he did also that he brought out the prevalence of upper respiratory infection which Park and Howland have emphasized in children with severe rickets. If the new conception, that pneumonia is primarily an infectious atelectasis is fully confirmed there would be all possible chance for pneumonia to occur in these cases of rachitic atelectasis probably secondary to an upper respiratory infection. The degree of pliability of the chest wall is sometimes astonishing. I forgot to mention the presence of pathologic fractures in some of the slides occurring especially in the lower ribs. If negative pressure were exerted on these ribs I think that it could probably cause fractures, just as they are caused by outside or positive pressure.

SLIPPING OF THE LOWER FEMORAL EPIPHYSIS

JOSEPH I KURLANDER, MD
Orthopedic Surgeon, St. Joseph's Hospital (Lorain, Ohio)
CLEVELAND

In recent years considerable attention has been given to injuries of the upper femoral epiphysis, particularly to that type of injury known as 'slipped' epiphysis. Orthopedic literature contains a considerable number of articles on injuries and displacement of the upper femoral epiphysis. Likewise at practically every orthopedic conference or convention cases of upper epiphyseal injuries are demonstrated. At these meetings, however, I have never seen demonstrated nor heard mention of a case of injury to the lower femoral epiphysis.

Injury to the lower femoral epiphysis, especially avulsion with displacement, apparently is so rare that standard textbooks such as those of Albee,¹ Jones and Lovett,² and Whitman,³ make no mention of this type of injury. Scudder,⁴ in his book (1926) on fractures, states that separation of the lower femoral epiphysis is extremely rare and occurs in children about 10 years of age. He further states that half of these injuries are compounded, the common displacement being anterior. He also adds that if the vessels are torn (1926),

* Read before the Section on Orthopedic Surgery at the Eighty First Annual Session of the American Medical Association, Detroit, June 22, 1930.

1 Albee, F. H. *Orthopedic and Reconstructive Surgery*. Philadelphia: W. B. Saunders Company, 1919.

2 Jones, Robert, and Lovett, R. W. *Orthopedic Surgery*. New York: William Wood & Co., 1929.

3 Whitman, Royal. *Orthopedic Surgery*. Philadelphia: Lea & Febiger, 1917.

4 Scudder, C. L. *The Treatment of Fractures*. Philadelphia: W. B. Saunders Company, 1926.

the popliteal) and there is much laceration of tissues, amputation should be performed. Bohler states that where the epiphysis is slipped anteriorly, it may be reduced by flexing the knee strongly. After reduction the knee is brought back to a 90 degree flexion. He also warns of the danger to the popliteal vessels.

An estimate as to the rarity of this type of injury may be adduced from the fact that in Cleveland, a city of about a million population with mixed diversity of industry, no surgeon with whom I have spoken recalls ever having seen a case of slipped lower femoral epiphysis.



Fig. 1 (case 1)—Condition before reduction

At the Cleveland City Hospital (1,000 beds), the attending radiologist recalls seeing but one case, and his memory is not clear as to exactly the type of displacement present. At St. Joseph's Hospital, Lorain, Ohio, with a population of 45,000, where a considerable amount of bone and joint traumas are seen, two cases of dislocation of the lower femoral epiphysis have been seen. It is evident, therefore, that complete avulsion and dislocation of the lower femoral epiphysis is extremely rare.

The lower femoral epiphysis is not united to the shaft until the twentieth year. Because of this late union of the epiphysis to the shaft injuries with dis-

placement may result to this epiphysis up to the twentieth year. It is therefore apparent that injuries to the discs of the lower femoral epiphysis before the age of 20 may result in premature arrest of ossification with a resultant greater or less shortening of the femur. It is entirely possible that by excessive stimulation the opposite may be true.

The capsule of the knee joint is attached to the femur just below the lower epiphysis and for that reason simple slipping of the epiphysis would probably not open up the knee joint.

This type of injury one would expect to see when the leg has been caught in a rapidly revolving carriage or wagon wheel.

REPORT OF CASES

The following are three cases which I am adding to the literature.

CASE 1—A white boy, aged 15, was tackled while playing football and was thrown forcibly to the ground. He does not remember the position of his knee in falling. He experienced immediate severe pain in the right knee joint, which was held in a flexion of 90 degrees and which could not be straightened out. He was removed to St. John's Hospital, where I saw him in consultation the following morning. Examination disclosed the right knee moderately swollen and tense and held in a flexion of 90 degrees. Attempts to manipulate the knee were impossible because of the sharp muscle spasm and pain. There appeared to be no deformity, although a slight bulging was apparent in the popliteal space. The pain seemed to be greater here. There was complete absence of the customary discoloration.

A roentgenogram (fig. 1) revealed a complete avulsion fracture of the lower femoral epiphysis with rotation and posterior displacement. Under ether-gas oxygen anesthesia, the displacement was reduced perfectly, as shown in figure 2, taken through the plaster cast. Reduction was accomplished as follows: The thigh was sharply flexed on the abdomen and the leg on the knee. In this position strong traction was made on the knee and leg until the epiphysis was heard and felt to snap into normal position. Without moving the knee or leg a plaster of paris cast was applied from the groin to the toes holding the knee in a flexion of 80 degrees. This cast was allowed to remain for four weeks following which it was removed and walking with crutches permitted, weight bearing being gradually permitted. The end results were perfect, within ten weeks the boy was playing basket ball.

CASE 2—A white boy, aged 10, fell and complained of a sharp pain in his knee, which he was unable to straighten. The attending physician was able to straighten the knee under anesthesia and applied a cast, which was permitted to remain for four weeks. The patient then came into the hands of another physician, who removed the cast and had a roentgenogram (fig. 3) made, which revealed the fact that there was an avulsion of the lower femoral epiphysis with marked anterior displacement. There was considerable callus formation and the epiphysis was uniting to the anterior shaft of the femur. At open operation this epiphysis was chiseled loose and replaced as near as possible to its normal bed. Unfortunately, the first roentgenogram is not available. Figure 4 shows the replacement, uniting to the femur with considerable callus formation. The end results were apparently perfect. This boy was last seen jumping and running and there was no evidence of a limp.

CASE 3—A white boy, aged 19, was injured by the explosion of a small compressed air tank, which struck him on the knee. He was immediately removed to a hospital, where an examination revealed the fact that there was a fracture of the lower shaft of the femur. There was no compounding of the fracture. A roentgenogram revealed an avulsion fracture of the lower femoral epiphysis with posterior displacement of the epiphysis. Two unsuccessful attempts at reduction were made under anesthesia. Several days later there were signs of gangrene in the foot and leg and amputation through the mid thigh was done. Following the amputation the stump healed nicely and the patient left the hospital in good condition.

SYMPTOMS

The symptoms are ordinarily those of a fracture in the region of the lower end of the femur or knee joint, an abnormal bulging appears in the popliteal space if the epiphysis is displaced posteriorly, or an anterior prominence in anterior displacement may be seen. Shock is also usually present. Palpation may reveal the true condition. However, the roentgenogram should always be taken both as a confirmatory diagnostic and as a protective measure. The treatment consists of reduction and complete immobilization for about four weeks, after which gradual motion may be established. Closed reduction should always be attempted under complete ether or local or spinal anesthesia, since complete relaxation is imperative. For reducing posterior displacements, the knee should be forcibly flexed at less than a right angle (from 75 to 80 degrees) and in this position forcible traction is made on the leg, an assistant making countertraction on the thigh, at the same time the operator manipulates the displaced epiphysis with his free hand.

Reduction having been accomplished, a plaster-of-paris cast is applied from the foot to the groin, holding the knee in strong flexion, at least 90 degrees. This position serves to lock the epiphysis and to prevent its redisplacement. A roentgenogram through the cast should be made, and if the reduction is not satisfactory the cast should be removed and another attempt at reduction made. If the epiphysis is displaced anteriorly, reduction should be attempted with the knee in full extension, and if reduction is not obtained the knee should be gently flexed during the process of extension and counterextension. After reduction, the plaster cast should hold the knee in moderate flexion. In other words, one would institute practically the same treatment as in a supracondylar fracture of the femur. Occasionally, nail extension may be indicated, especially in the compound cases. Should closed reduction be impossible, then open operation is indicated. The epiphysis is best exposed through an adequate incision along the inner or outer side of the lower thigh, or through both an inner and outer lateral incision. Should there be a laceration of tissues with a compounding of the fracture, the appropriate treatment for such an injury is indicated. In those unusually severe cases in which the large vessels have been torn, amputation may become necessary. In this connection I wish to call attention to the intracutaneous injection of physiologic solution of sodium chloride as a diagnostic measure to ascertain patency of the main vessels.

The prognosis after proper reduction is usually very good, function gradually returning to normal.

SUMMARY

- 1 Slipped lower femoral epiphysis is a rare type of injury.
- 2 Considerable force is necessary to produce this type of displacement.
- 3 This injury can occur up to the twentieth year because of the late union of the epiphysis to the shaft of the femur.
- 4 Closed reduction should be attempted only to be superseded by open operation if the former is unsuccessful.
- 5 The intracutaneous test with physiologic solution of sodium chloride should be used when one is in doubt as to the continuity of the popliteal vessels.
- 6 The prognosis is usually very favorable.

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ABSTRACT OF DISCUSSION

DR M L KLINEFELTER, St Louis I agree with Dr Kurlander that this condition is relatively rare as compared with the slipping of the upper femoral epiphysis and also that in no instance have I seen a case that was not purely traumatic rather than partially due to predisposition, as in the upper femoral epiphysis. He has called attention to the seriousness of this lesion. In the first place the soft structures are severely damaged in a complete separation of the lower femoral epiphysis. I have not seen a case in which either the peroneal or both peroneal and posterior tibial nerves were paralyzed. I have seen some cases in which the vessels were absolutely occluded, in which the leg became cold and the foot became cold and dark, and in some cases practically black. The very nature of the angle on this bone is an important factor in these cases—the fact that it is an epiphyseal separation rather than a fracture makes these vessels and nerves less likely to be cut. I have reduced some cases in which the foot had been

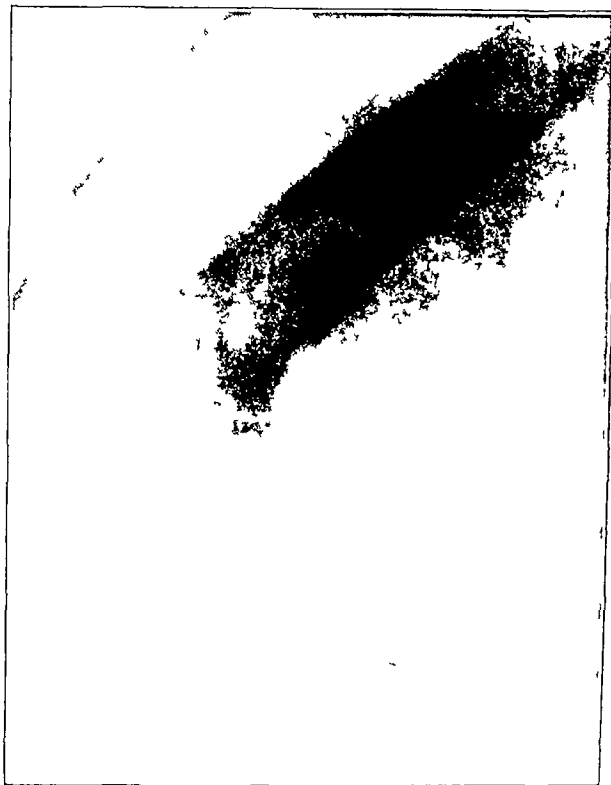


Fig 2 (case 1)—Appearance after reduction

cold for days according to the history and certainly for a number of hours according to accurate history and the circulation was restored. The nerves have recovered in every instance in the cases in which I have had experience even though they had been out for some time. The most important point aside from the actual injury is for the general practitioner to recognize the seriousness of the lesion early. It practically always results in a paralysis and if displacement continues for any great length of time must frequently result in an amputation. I have never seen a recent case. All the cases have been brought to me as a result of complications. I have had three out of twelve in which the growth of the lower femoral epiphysis was arrested—two of these cases were not recognized and in the other one the physician told me he was unable to control the child. So I feel this might have an important bearing on the arrest of growth. The other nine were immobilized. I have been able to reduce only one by the closed method. I am struck with the extreme severity of the injury when I open the capsule which I have always had to do. In the second place a surgeon who has not the broadest knowledge available is not equipped to reduce slipped epiphyses.

after they have been off a week or more and regardless of the time they frequently cannot be reduced without damage to the epiphyseal lines and one has to use a skid with some one handle the leg and then press on the epiphysis with gauze to effect reduction without actually crushing certain parts, even when they have been off for only a week.

DR JOHN J. MOORHEAD, New York. My experience with what for want of a better name can be called a fracture dislocation of the epiphysis of the lower end of the femur is limited to two cases. Both were late cases and numerous attempts had been made under the closed method of reduction. Rather than resort to an open operation, the hazards of which have been mentioned, I inserted a transfexion pin in the upper end of the tibia and made a satisfactory reduction by traction, starting with a large poundage, 40 pounds (18 kg.) and gradually reducing it. In one of these cases the ultimate result was quite satisfactory in the other, an epiphysitis developed interfering with the growth of the limb. One of the earliest things that should be done is an immediate aspiration of the



Fig 3 (case 2) —Condition before reduction. Note callus formation.

knee joint, which relieves the tension and makes it easier to make the reduction. In the early cases in the majority of cases reduction can be made by manipulation under anesthesia. In the older cases, in which too diligent attempts have been made to reduce by the closed method and have failed, one should choose as the second choice skeletal traction. My experience is that the automobile is the big factor and the majority of the cases I have seen have occurred as a result of the legs being caught in a revolving wheel. Before the time of the automobile I think that the typical way was in hitching on a wagon and having the foot caught in the revolving wheel, particularly of a large ice wagon. As to open operation I have had no experience with it. It should be reserved for the type of case in which closed manipulation or the skeletal traction has failed.

DR R. WALLACE BILLINGTON, Nashville, Tenn. This is perhaps not quite so infrequent an accident as Dr Kurlander would have one believe. As the last speaker has just said it was known formerly as the cartwheel fracture, caused as he described it. I had the misfortune to have a bilateral case in a boy, aged 11 years, caused by an automobile accident four

weeks prior to the time I saw him. It was of the type which the two lower femoral epiphyses were separated completely and displaced anteriorly, and union had taken place the time I saw him. I thought it might be possible to reduce this under an anesthetic, although I had little hope of it. Prepared for the operation, and after feeling the condition of the limbs under anesthesia, I found them quite solid, so I proceeded to operate. The method already described was used. Lateral incisions and skidding gently, that is, by using a bone skid and making as little trauma as possible to the epiphyseal cartilages, I skidded the epiphyses back into place. It was necessary to keep the knees flexed at a right angle or a little beyond to prevent easy redislocation. The limbs were put in plaster casts in a position slightly less than 90 degrees. The operation was done four years ago, and I have not been able to get this patient up to see me recently, but I have had word from the father and from the local physician that the boy is a strong, normal boy now with no interference with the growth of either limb. The limbs are straight with no deformity; motion is unlimited. This case was not compound. There was little interference with the circulation at the time I saw him and no paralysis. I feel that I was fortunate and had a bit of good luck in getting that sort of result in a case of this kind. It is the only case of bilateral dislocation of which I have been able to learn.

DR H. W. MEYERDING, Rochester, Minn. I am greatly interested in the report of Dr Kurlander. It has been my experience that this fracture or slipped epiphysis, common results from being caught in a wheel and twisted. Occasionally one sees if early roentgenograms are taken a strip of fracture of the lower anterior border of the diaphysis. Should one have the good fortune to see the patients early immediate aspiration followed by a period of three or four to five days rest would be indicated. I have divided the fractures into two groups: first, those partially dislocated; second, those completely dislocated with or without fracture. My experience has been with those cases of long duration which have been completely dislocated anteriorly and which have gone on to fusion. At the meeting of this section a year ago I reported a series of 128 cases of Volkmann's ischemic contracture. At the time I studied these I was impressed with the similarity between that group and this group. I was impressed with the fact that although there is an impaired circulation the fractured and slipped epiphyses it does not ordinarily develop. Thus in both one finds the epitrochlear space and the popliteal space filled with blood and the upper fragment shoved downward and backward causing pressure on the blood vessels and nerves. The reduction of the fracture and the emptying of this blood clot are usually followed with improvement of the extremity. In my cases of long standing in which malunion has occurred I have found the split patella incision useful. I reduce the epiphysis with a bone skid at times I have found it necessary to maintain reduction by the use of a bone screw, following this, plaster-of-paris casts are applied.

DR PHILIP D. WILSON, Boston. In this period when it is difficult to know what every other physician is talking about anyhow, one ought to be awfully careful of the terms and think I am justified in criticizing the title under which this is presented which is 'slipping epiphysis'. I think what we are discussing is the usual traumatic separation, complete or incomplete. In the fracture service at the Massachusetts General Hospital during the last year, nine of these cases were traced over a period of five years from the time of injury and out of these nine six, or two thirds, showed complete arrest of growth. This was a striking finding and I was impressed with the fact that the shortening occurred so gradually that unless these cases were followed over a period of a long time one would not get the end-result with the total shortening. The total shortening in most of the cases was 2 or 2½ inches. In one case part fracture and part separation a portion of the epiphysis separated and stopped growing and the other portion where it had fractured higher in the bone continued to grow so a tremendous knock-kneed deformity resulted and that boy has since had to come in for an osteotomy. I was impressed with the gravity of this injury and

the necessity of warning parents when it occurred that this result might be expected. It is a result that I am confident comes from the nature of the injury itself and not from the kind of treatment. All of the cases I described were reduced by closed reduction except one which was an open reduction but one in which very good reposition had been obtained.

DR ROLAND HAMMOND, Providence, R. I. The paper and discussion so far have indicated that the author and speakers favor approximately the right angle position or at least one of flexion. I should like to point out that that position is sometimes a dangerous one. Two or three years ago I had a fresh case of this condition in which, after manipulation, I applied a plaster cast in approximately a right angle position and a subsequent roentgenogram showed a perfect reduction. I did not check the roentgenogram until about four weeks afterward and was surprised to find that the epiphysis had slipped back into its original dislocation. Since then I have had several of these and after reducing by manipulation, I have put the leg straight in complete extension and have never had any relapse. It seems to me that is the more rational position because the muscles are in a neutral position.



Fig. 4 (case 2)—Appearance after reduction showing degree of flexion necessary to hold fragments reduced.

DR J. J. KURIANDER, Cleveland. These injuries are extremely serious and I have heard several of the men in the discussion say that the shortening has been as great as 2 or 2½ inches. At the age of 19 there would be no appreciable shortening because the epiphysis is almost fully united to the shaft of the femur. The two other cases have occurred in patients within the past year and at this time I have no way of estimating what the future shortening if any will be. The children run, jump and play as normal children would. Dr. Moorhead has said that he does not use much force in the reduction and if he cannot obtain reduction he inserts a pin through the condyles and treats the condition as he would a supracondylar fracture. That is what I said in my paper, namely, that these cases would require practically the same treatment as a supracondylar fracture of the femur. But if real extension is used, considerable weight will have to be applied to obtain reduction. Dr. Wilson objected to my calling these cases "slipped epiphysis." He is probably correct as the first two cases were avulsion fractures in which, as in the first case, there is a true slipping. Dr. Hammond said he believes

that the relaxation of all the muscles is best secured when the leg is put out straight, and for that reason he advocates that position in holding the reduction. I have had only three cases, in two of which reduction was done and in the other amputation performed and I would consider this fracture analogous to a Colles fracture. One may get perfect results with a Colles fracture reduced and held straight, but a little more certain if the wrist is strongly flexed and the fragments locked and I am afraid that I shall still continue to use the extreme flexion in holding a reduced slipped lower femoral epiphysis.

NONTRAUMATIC DISLOCATIONS OF THE ATLANTO-AXIAL JOINT*

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AND

FERDINAND SEIDLER, M.D.

CHICAGO

Recently we have observed several cases of dislocation of the atlanto-axial articulation which were not associated with trauma but resulted as a complication of acute infectious diseases.

With the development of the roentgen ray, cases of traumatic dislocation of this joint have been diagnosed more frequently. Several of the cases, which have been described in the literature, had no evidence of injury to the spinal cord, but most of them were associated with fractures. The injury together with its mechanism of production and the roentgenographic appearances have been thoroughly described in the literature.

Many cases of dislocation have been noted which are the result of destructive diseases, such as tuberculosis and syphilis, but we were unable to find any reported cases of simple dislocation without associated trauma or destruction of bone.

The cases included in this report were dislocations at the atlanto-axial articulation which were direct complications of upper respiratory infections.

ANATOMY

For a proper understanding of this condition the normal anatomy of this region must be considered.

The atlas-axial articulation is complicated in that it is made up of four distinct joints, which permit a wide rotation of the atlas on the axis. These are the atlanto-odontoid joint of Cruveilhier, which is a pivot articulation between the odontoid process of the axis and the posterior surface of the anterior arch of the atlas, the syndesmo-odontoid joint which is a sliding joint between the posterior surface of the odontoid process and the anterior surface of the transverse ligament and the two gliding joints between the lateral masses on each side.

The articulating facets between the atlas and the axis are almost plane. The inferior facets of the atlas are almost circular, while the superior facets of the axis are more oval. The plane of the facets of the axis is of the most importance in that it is inclined downward from its posterior margin, both anteriorly and laterally. The joint capsules are loose, permitting a wide range of motion.

The ligamentous structures connecting these two vertebrae consist of the anterior and posterior atlanto-axial ligaments which are continuous with the anterior

*Owing to lack of space, several illustrations have been omitted. The complete article appears in the author's reprint.

*Read before the Section on Orthopedic Surgery at the Eighty-Eighth Annual Session of the American Medical Association, Detroit, June 1, 1916.

and posterior spinal ligaments. The latter is reinforced by a membrane, which attaches the anterior rim of the foramen magnum to the axis.

The ligamentum transversum atlantis, which is the horizontal portion of the cruciform ligament, is one of the strongest ligaments. It is attached to the lateral masses of the atlas posterior to the odontoid process and is separated from it by a bursa.

The normal relationship of these vertebrae to each other, forming the neural canal, depends on the ligaments, and any loss of the ligamentous supports either by rupture or relaxation will result in dislocation and danger of subsequent compression of the spinal cord. Also in the forward dislocation of the atlas on the axis there may be an injury to the vertebral arteries as they pass through the foramina in the lateral processes of the atlas.

ROENTGENOGRAPHIC CONSIDERATIONS

This lesion can be demonstrated best by projections of the craniocervical region with the patient lying on his side. Stereoscopic views of the bones and joints of this region are better than the anteroposterior and the lateral views.

The patient's head should be placed so that its sagittal plane is parallel to the plane of the film, thus bringing it in direct line with the long axis of the spine, with the weight of the body resting on the shoulder. This can

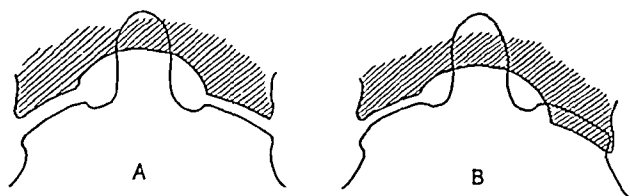


FIG. 1.—A, normal relation of the atlas and axis. B, overlapping anterior articular surfaces in unilateral dislocations of the atlas on the axis.

be best accomplished by the use of a hard pillow or a block of proper thickness on which the film is laid.

The anteroposterior view is of value in this type of dislocation, especially for the demonstration of lateral displacement of the involved bones and the overlapping of the articular surfaces. This view is difficult for the roentgenologist to obtain, because on the direct anteroposterior projection the atlas and a part of the axis are covered by the shadows of the occipital or those of the mandible, or both. Hence, the view of the atlas-axial region is frequently interpreted as negative because one is not able to see these structures.

The patient should be placed in a supine position, the mouth opened as wide as possible and maintained by a cork or other roentgen transparent material placed between the teeth.

The central axis of the roentgen ray is passed through the center of the mouth, emerging just below the occiput. The result will be a clear shadow of the atlas, the odontoid process and the body of the axis.

The lateral view of the normal structures reveals the shadow of the anterior arch of the atlas in close apposition to the odontoid process.

The foramen magnum is exactly over the space behind the shadow of the odontoid process and anterior to the shadow of the posterior arch of the atlas. All the cervical bodies are in line with one another, being so arranged as to form a continuous curve with its convexity forward. A line drawn on the roentgen film from

the anterior edge of the atlas will connect all the anterior margins of the cervical vertebrae in a continuous arc, while a similar line, if drawn from the posterior surface of the odontoid process downward, will describe an arc touching the posterior surfaces of the bodies of the cervical vertebrae and will represent the anterior margin of the spinal canal.

The shadow of the angle of the mandible is close to the anterior edge of the cervical bodies when the head is held in the normal position. The anteroposterior view will show an even spacing of the two lateral masses of the atlas with the odontoid process between them and the joint spaces between the articulations of the atlas and the axis will be symmetrical and clearly visible.

ROENTGEN APPEARANCE IN THE DISLOCATION

In dislocations of the atlanto-axial joint these relations are disturbed according to the degree of forward or backward luxation and according to whether it is unilateral or bilateral.

In the anterior dislocation, the lateral view shows the anterior arch of the atlas relatively farther forward with respect to the odontoid. The lateral mass of the atlas and the spinous process of the axis do not converge but are divergent, so that the posterior arch of the atlas approximates the occiput more closely than normal, which shows that the atlas is tilted downward and forward on the axis.

In unilateral dislocations the atlas is tilted to one side, and hence the posterior arch appears broader than normal.

The shadow of the lateral masses are both visible, so that one is able to see the neural canal.

In the anteroposterior views the odontoid process of the axis is not seen in its normal relation to the atlas. The absence of the joint space between the lateral facets of the atlas and axis is pathognomonic of this condition.

There is either a complete overlapping or a diminution of the joint space on one or on both sides, depending on the type of dislocation.

In the unilateral type, where there is an overlapping only on one side, the opposite joint space is abnormally wide.

MECHANISM OF PRODUCTION

It is generally known and accepted that a large effusion into a joint, as the result of an inflammatory process, is frequently associated with considerable relaxation of the joint capsule and ligaments resulting in a pathologic dislocation.

Every one is familiar with the pathologic dislocation of the hip without bone destruction. It is logical to assume that a similar process could occur in the atlanto-axial articulations, which are mechanically weak because of the position of the articulating facets and large loose joint capsules.

The same process may take place in the anterior and posterior bursae, which separate the odontoid process from the atlas and the transverse ligament, respectively. The localization in the posterior bursa would naturally involve and weaken the transverse ligament, which is normally stronger than the odontoid process, and, hence, in traumatic conditions the process is fractured before the ligament is ruptured. With the relaxation of these structures and with the mechanical weakness of these joints, it is easily understood how these joints acquire a hypermobility with resulting dislocation.

There are three types of dislocation.

The slanting position of the articulating facets predispose to a forward position of the atlas either as a unilateral or a bilateral dislocation.

A bilateral posterior dislocation is impossible because of the approximation of the odontoid process to the posterior surface of the anterior arch of the atlas, but there may be a unilateral posterior dislocation. A further reason why the anterior type predominates may be explained by the fact that the center of gravity of

the head is farther forward than the anatomic support. Any other factors producing flexion of the head on the neck, such as recumbency with pillows under the head, will also predispose to the forward dislocation.

ETIOLOGIC FACTORS

All of the patients had an upper respiratory infection, which preceded the symptoms in the neck from a few days to two weeks. Patient 1 developed an arthritis in other joints and a pericarditis before the neck involvement. Patient 2 had scarlet fever and a throat infection,

which was thought to have been diphtheria, but this was not proved by cultures. Patient 3 had a definite acute conjunctivitis. Patient 4 had a cold and tonsillitis, while patient 5 had a definite acute attack of influenza.

From the foregoing histories it is evident that there was a definite relationship between the previous infection and the disability of the neck, and since it happened in five cases it cannot be spoken of as accidental but rather as a definite etiologic factor.

Since none of these patients were seen by us during the original acute illness, it was not possible to determine the exact type of infection, although the streptococcus seemed the most probable.

The infection may become located in these articulations either through the blood stream or by way of the lymphatics, since there is a direct connection of the drainage from the pharynx and the upper cervical spine through the retropharyngeal glands, and these with the deep cervical glands, which were palpable in cases 2 and 3.

SYMPTOMS

The striking feature presented in all these cases was the torticollis without evidence of nerve injury except for the peripheral nerve irritation.

There was a few degrees of motion in flexion and extension. Rotation in the direction increasing the deformity was slight but none was possible toward the midline. Any passive attempts at correction of the deformity—even the slightest jarring of the head—elicited severe pain.

On palpation the spinous process of the second cervical vertebra was very prominent and it deviated toward the side to which the chin pointed. In an attempt to correct the deformity, the deviation increased, while in an attempt to exaggerate the deformity it approximated the midline.

Because the atlas and the axis are locked in the dislocation, no rotation of the atlas on the axis is possible.

The patient, in attempting to correct the position, moves the axis together with the lower cervical spine in the opposite direction. Therefore, in increasing the real pathologic rotation, the compensatory motion in the opposite direction is no longer present and the spinous process is found in the midline. This phenomenon was described by Sudeck, in a report of two cases of atlanto-axial dislocation.

In a bilateral dislocation, one is able to palpate the lateral bony masses in either side of the neck just posterior to the angle of the mandible.

In unilateral anterior dislocation, the rotation of the chin is away from the dislocated side.

It is a rotation dislocation with the odontoid process serving as an axis up to a certain degree of rotation. This symmetrical dislocation is stopped as soon as the posterior movement of the opposite process cannot go farther, and hence it serves as a fixed point and this now becomes the axis. As the rotation is then continued, the articulating surface of the atlas moves farther forward, so that there is no apposition with the articulating surface of the axis. This results in the locking of the bones and the fixation of the dislocation.

In the unilateral posterior dislocation the rotation is toward the dislocated side and the articulating surfaces on the opposite side are separated from each other a little farther than normal.

TREATMENT

The treatment naturally consists of the reduction of the dislocation. This may be accomplished (1) by constant traction, or (2) by forcible manipulation under anesthesia. Four cases were treated by traction and one by manipulation.

Traction is best accomplished by placing the patient on a Bradford frame for a few days. During this time the patients become accustomed

to the position. It was remarkable how comfortable the patients became in a short time although two patients previously refused to lie down and were propped up in bed in a sitting position. As soon as the patient was comfortable, a slight constant traction was applied by means of a head halter and weight over a pulley at the head of the bed. The traction was applied in a longi-



Fig. 2 (case 1)—Lateral view showing forward displacement of the head and atlas on the axis and other cervicals. Note the position of the odontoid process near the posterior arch of the atlas.

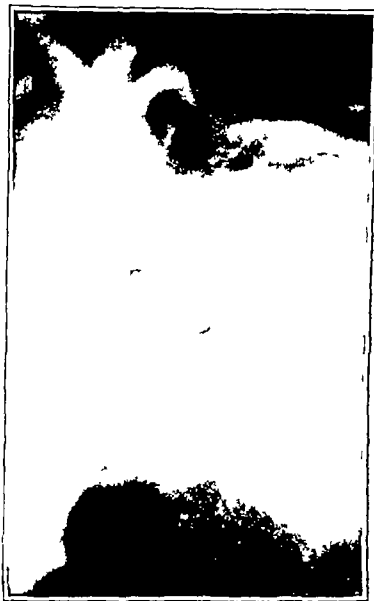


Fig. 4 (case 1)—Lateral view after reduction. Note now the normal relations between the axis and the atlas.

tudinal direction at first. With relief of the muscle spasm, the traction was increased, and the direction of the traction was altered so as to obtain hyperextension of the head and the neck.

The hyperextension was obtained by placing a rolled sheet transversely under the neck and by bending the side bars of the frame at the level of the lower cervical spine.

It should be emphasized that the important features of the treatment are the constancy of the traction, the fixation of the body to the Bradford frame, which immobilizes the entire spine and the hyperextension.

In the course of a few days a definite improvement of the position was noted with an increased range of motion. The progress of the reduction and the course of the treatment as to the length of time of recumbency and the amount and direction of the traction was directed by physical examination and roentgenograms. The time necessary for the reduction varied from eight days to five months.

Case 1, which required five months for reduction, was bilateral and the most severe type observed. Because of the poor general condition of the patient—especially her cardiac condition—extreme care was necessary. As



Fig. 6 (case 3)—View through open mouth again showing dissimilarity at lateral joints between the atlas and the axis. Overlap of articulating facets on the right side.

this was our first case to be treated in this manner we did not force the treatment, and, hence, more time was necessary.

The duration of the dislocation did not seem to influence the length of time necessary for the reduction.

After the reduction was accomplished the traction was continued for a variable length of time, and then a plaster cast was applied, extending from the occiput and chin down to the lower ribs. In a few days the patients were permitted to sit up and soon afterward they were ambulatory. After a few weeks' time only a plaster collar was applied, which gave more freedom of motion. When this collar was removed, a cotton roll collar was applied for protection and active motions were encouraged.

Patient 5 was treated by forcible manipulation under anesthesia, because the parents did not wish to have the patient hospitalized for a prolonged period of time.

Under complete anesthesia with muscle relaxation the deformity persisted. In the manipulation moderate traction was applied to the head, increasing the tilt of the head to the right and rotation to the left. From this position the head was slowly rotated to the right and tilted to the left. While this procedure was being accomplished there was a definite snap, which was felt

and heard. After this, the head and neck assumed the normal position and the head was freely movable on the neck in all directions. A plaster cast was applied to the head, neck and thorax with the position overcorrected, i. e., with the head rotated to the right and tilted to the left.

Although the reduction immediately after this procedure was satisfactory, it was shown in the later course that traction could not be dispensed with.

The forcible manipulation reduced the deformity, but the plaster-of-paris cast maintained the compensatory rotation in the lower cervical spine, where, as in the traction method, both the original and the compensatory rotations were corrected simultaneously.

CONCLUSIONS

1 In five cases of nontraumatic dislocation of the atlanto-axial joint, occurring in children from 8 to 11 years of age one was a bilateral forward dislocation while four were unilateral—two anterior and two posterior.

2 These occurred as a complication from one to two weeks after an acute upper respiratory infection.

3 They presented a rather characteristic torticollis deformity, with marked fixation and pain on attempted motion.

4 Roentgenograms showing this dislocation are difficult to obtain when the extreme deformity is present, and hence, they are usually interpreted as negative. But when a good view of this region is seen, the dislocation is shown in an overlap of the lateral articulating facets. As the dislocation is further reduced, the overlap diminishes and the joint space reappears.

In the unilateral anterior dislocation the chin deviates to the opposite side, while in the posterior dislocation the chin deviates toward the same side.

The lateral view in the anterior dislocation shows the anterior arch of the atlas to be misplaced relatively far forward with respect to the odontoid.

5 All these dislocations were reduced—four by means of constant traction in hyperextension and the other case by forcible manipulation under anesthesia.

REPORT OF CASES

CASE 1—H. K., a girl aged 8 years was admitted to the hospital Nov. 26, 1928, because of swelling, stiffness of the neck and inability to open her mouth. Three months before she had had a swelling of her fingers and of her right foot. At times the symptoms were worse in the fingers and at other times they were worse in the foot. One month later the neck became tender and swollen in the back. She was unable to open her mouth because of pain. She could walk about with care and sit but she refused to lie down because recumbency aggravated the pain in the neck. There was headache and general weakness with the loss of 10 pounds (4.5 kg.) in weight. She was sent to the hospital with a diagnosis of cervical Pott's disease.

The family history was negative for tuberculosis.

When first seen the swelling of the fingers and of the foot was no longer present and there was free motion in all the joints. She was able to walk but took her steps with extreme care so as to avoid any jarring of the head and neck, which she supported with both hands. She sat down with extreme care. The neck seemed short. The head was held forward and rotated to the right with a slight tilting to the left. There was no active motion in any direction. Any attempt at passive motion elicited great pain. A marked bony prominence could be felt posteriorly to the right of the midline which was the spinous process of the second cervical vertebra or axis. The transverse processes of the atlas could be felt on both sides of the neck, more distinctly on the right side just above the

angle of the jaw. There was no evidence of spinal cord or sympathetic nerve involvement in that all the reflexes were present and normal and the pupils were equal and reacted to light and in accommodation. The only nervous symptoms were the subjective ones of neuralgia and pain in the head. There was no swelling in the fingers or foot and all motions were normal. The examination of the chest and abdomen was negative, except for the cardiac condition which consisted of enlargement to the left with a systolic murmur over the apex, which was transmitted to the left.

Laboratory observations showed a slight anemia in the blood picture with a normal white blood cell count.

The urine was normal and the Pirquet and Wassermann reactions were negative.

The lateral roentgenogram of the upper cervical vertebrae, taken November 28, revealed a marked forward dislocation of the atlas on the axis. It was tilted so that the anterior process lay anterior to the body of the axis. The distance between the posterior process of the atlas and the spinous process of the axis was greatly increased. In fact it was displaced upward and forward so that it appeared to be in contact with the occiput. Furthermore, it approximated the odontoid process so closely that it was difficult to understand or conceive where there was space sufficient for the spinal cord. The atlas was not dislocated directly anterior but was also tilted to the right, so that one was able to see through the neural canal.

The anteroposterior view taken the same date through the open mouth presented difficulties of analysis. The most striking feature was the appearance of a circular opening on the bony ring that lies directly over the vertebral column and was interpreted as the neural canal of the axis. The lateral articulations of the atlanto-axial joint could not be made out because the vertebrae overlapped each other, obscuring them and the odontoid process was displaced from its normal position. The right lateral process of the atlas was displaced farther toward the right and in it the transverse foramen could be seen.

December 6 the patient was placed on a Bradford frame, and two days later extension was applied by means of a head halter with weight and pulley traction, which gave immediate relief. In ten days there was less rigidity and the neck was much straighter. One week later the patient could open her mouth much wider, and her head was in good position.

Roentgenograms taken Jan. 2, 1929 (fig. 2) still showed a marked forward displacement of the atlas with some tilting both forward and to one side on the axis. The posterior process of the atlas was not as close to the occiput because the vertebra was not tilted as far as it was at first. This diminution of the tilt was also shown in that the anterior process did not extend downward anterior to the axis as far as in earlier views. The odontoid process was seen plainly in its normal position and there was no evidence of any pathologic changes. The rather marked compensatory lordosis seen in early views was considerably diminished. The anteroposterior view (fig. 3) also showed a diminution of the tilt of the atlas on the axis as the bony ring was now seen to be more oval and not circular as it had appeared originally. The joint spaces of the lateral articulations between the atlas and the axis could not be seen, but one could see the articular processes, which overlapped each other on both sides.

The amount of the constant traction was increased with greater hyperextension and the accompanying roentgenograms were obtained May 6. The lateral view (fig. 4) showed the atlas in normal relation to the axis and the anteroposterior view (fig. 5) showed the normal joint spaces of the lateral articulations between the atlas and the axis. The transverse processes of the atlas were symmetrically placed with respect to the odontoid and the transverse foramina could not be seen.

September 25 the patient could open her mouth the natural width the position of head and neck was normal and there was no restriction of motion. Traction was removed and a plaster cast was applied from the chin and occiput down to the crest of the ilium.

November 2 she was discharged from the hospital wearing the plaster collar. She could walk and sit without discomfort.

December 30 the cast was removed. There was no deformity of the head or neck but there was some restriction of motion in all directions. Feb. 10, 1930 there was limitation of motion

to the left, but actively she could rotate the head to the right about 45 degrees. Lateral bending, flexion and extension were almost free. The spinous process of the axis was still more prominent than is normal, although it was in the midline.

Roentgenograms, February 10, showed in the lateral view that the atlas was farther forward on the axis than it was in the previous roentgenogram and there was an increase of the cervical lordosis. The anteroposterior view revealed a decided narrowing of the joint space of the left atlanto-axial articulation. As these observations indicated a recurring dislocation of the atlas on the axis a leather collar was made and applied to maintain hyperextension.

CASE 2—C. A., a girl, aged 10 years, was admitted to the hospital, Aug. 13, 1929, because of a crooked neck, which was painful on attempted motion. Four months before she had had scarlet fever and diphtheria (?). The second day she had received an injection in the buttock and two days later was unable to move her legs. Then, the following day she could not move her arms and the next day she was unable to move her neck. Four days later she regained the use of her arms and legs. However, she did not regain normal motion of her neck, although the pain disappeared after two months. There was no swelling of the neck at any time. The rest of the personal and family history was irrelevant.

The child was undernourished but was otherwise normal except for the deformity of the head and neck. The head was



Fig. 7 (case 3)—Appearance one month later after clinical cure. The two joints are now similar.

turned to the right with the neck flexed so as to depress the chin on the chest. The head was tilted slightly to the left. Actively she was able to rotate the head a few degrees more to the right but there was no active rotation to the left and passive attempts caused pain. There was only a few degrees of flexion or extension. All reflexes were normal.

Laboratory observations including the Wassermann and Pirquet reactions were negative. A roentgenogram taken August 12 through the open mouth showed in the anteroposterior view an overlapping of the articular surfaces of the atlas and the axis on the left side while on the right side they did not overlap and the normal joint space could be readily seen. The position of the mandible indicated a tilt of the head to the left with rotation of the head to the right. There was a compensatory rotation below the second cervical vertebra to the left, as was shown by the position of the transverse processes.

The lateral view taken on the same date showed the atlas a little farther forward on the axis than is normal.

August 14 the patient was placed on a Bradford frame with extension by means of a head halter, weight and pulley traction. She was comfortable immediately. After eight days treatment in this manner roentgenograms were taken which showed the head in normal position. The left atlanto-axial articulation which could not be seen in the previous view was now plainly visible although the joint space was not as wide as it was on the opposite side.

September 17 the deformity was well corrected and there was free motion within almost the normal limits in all directions.

September 18 the traction was removed and a plaster collar was applied. September 29 the patient was discharged from the hospital, wearing the plaster collar.

CASE 3—J. P., a boy aged 9 years entered the Presbyterian Hospital in the pediatric service of Dr. Grulee Oct. 6, 1929, with the complaint of a stiff neck and fever.

He had caught cold in the head three weeks before admission. About two weeks later he began to complain of the stiffness of the neck and of pain on motion. He was taken to a



Fig. 8 (case 4)—Original deformity.

hospital and discharged after three days with a diagnosis of neuralgia of the neck and tic douloureux. The pain became so severe that he was unable to move his head or permit the least jarring. In fact, he was exhausted from holding his body tense. He was suffering with a sore throat and fever during this time. He was always conscious and had no symptoms of meningeal irritation. His past history was negative except for frequent sore throats and a tonsillectomy four years before.

The patient was well developed and well nourished. He lay in bed with his head rotated to the right

almost 90 degrees. There was a marked involuntary muscle spasm and the left sternocleidomastoid muscle was very tense. There was bilateral cervical adenitis, but the glands were not tender to palpation. The spinous process of the second cervical vertebra was very prominent posteriorly and to the right of the midline.

There was no active motion and any attempts at passive motion elicited extreme pain. There were no other abnormal physical observations, except for evidence of sore throat which consisted of a red granular appearance of the tonsillar pillars and pharynx.

Roentgenograms were taken on admission to the hospital. Figure 6 showed a condition similar to that in case 2 in that there was an overlapping of the lateral articulations between the atlas and axis on the right side and an increase of the joint space on the left. But it must be noticed that in this case the head was rotated toward the dislocated side, which indicated a posterior subluxation.

October 10, he was placed on a Bradford frame and traction was applied. After one week of treatment he did not complain of pain and could move his head through an arc of about 30 degrees. The traction was then increased and one week later he was able to rotate the head actively 30 degrees to the left of the midline.

Roentgenograms taken, October 25 (fig. 7), showed both joints to be symmetrical. December 5, the traction was removed and a plaster collar applied. December 15 he was ambulatory without any discomfort. December 22, when the plaster collar was changed there was normal position of the head and free motion in all directions. Another plaster collar was applied for protection, and he was discharged from the hospital, December 24. Two months later the collar was removed.

CASE 4—N. D., a boy aged 11 years entered the hospital Sept. 9, 1929, complaining of a stiff and painful neck of two months' duration.

He had contracted a cold and a sore throat two months previously while watching an airplane take off, and two days later he complained of stiffness and pain in his neck. The pain became gradually worse so that the least jarring was unbearable. There was a feeling of soreness in the mandible. There

was no history of injury or previous attacks of similar trouble. The family and previous history was irrelevant.

The boy was well nourished and well developed. He did not appear to be ill. His head and neck were shifted to the right. His chin pointed to the right with some tilt of the head to the left and slightly forward.

There was a right convex cervical scoliosis with a compensatory scoliosis to the left in the upper dorsal region. There was very little motion present. Actively, he could rotate the head a little farther to the right but not to the left. There was a little motion in flexion but no extension. Attempts to move the head passively on the neck caused much pain. When attempting to lie down, he first lay on his abdomen and while supporting his head with both hands rolled over on his back, which was a less painful procedure than to lie down naturally. Except for the foregoing observations, the physical examination was negative, as were the laboratory observations including the blood examination and the Pirquet and the Wassermann reactions.

Roentgenograms showing the condition of the atlanto-axial region at the time of admission could not be obtained because of the deformity and the patient's inability to open his mouth wide enough. He was placed on a Bradford frame with traction on the head. October 11, the position of the head was much improved.

Roentgenograms taken at this time showed in the lateral view the atlas tilted on the axis so that the shadow was oblique and thrown on the occiput. The anterior view (fig. 9 A) aided greatly in recognizing the displacement, which was the same as in figure 6.

After further treatment with traction and greater hyperextension roentgenograms taken November 13 showed normal relations of the atlas and the axis (fig. 9 B). The traction was removed and a plaster cast applied Jan. 8, 1930, when the cast was changed there was free range of motion of the head and neck and he was discharged January 10 wearing this collar. February 3 the plaster collar was replaced by a roll collar of cotton and bandage.

CASE 5—E. C., a girl aged 9 years was sent to one of us (F. C. S.), June 19, 1929, for the correction of a deformity of the head and neck, which had been previously diagnosed as an hysterical torticollis.

Her past history revealed that she had had an acute attack of influenza, Christmas, 1928. One week later she developed a torticollis which had persisted. There was no history of trauma or other illness.

On examination she presented the appearance of a rather anemic, undernourished child. The head was tilted extremely to the right and rotated to the left. There was a marked right cervical scoliosis in the lower cervical region, which gave the impression



Fig. 10 (case 4)—After reduction of the dislocation.

that the head and upper portion of the neck were shifted to the left. The head was held fixed. There was no active or passive motion in any direction, except for a few degrees of flexion and extension. Any attempt to correct her position passively was extremely painful. The right shoulder was held elevated higher than the left.

The laboratory observations including the Pirquet and the Wassermann reactions were negative.

A roentgenogram taken through the wide open mouth (fig. 12) June 26 showed a marked rotation of the head so that

the mandible deviated to the left of the midline with some tilting of the head to the right

The lateral articulation of the atlas and axis on the right side was overlapped completely, while on the left side the joint space was visible. The right transverse process of the atlas was closely approximated to the third cervical vertebra, which demonstrated that it was completely displaced and tilted forward. The lower cervical spine showed plainly a marked compensatory rotation as the third and fourth vertebrae were seen to be projected as a lateral view instead of the antero-posterior view.

There was a right convex scoliosis in the lower cervical spine. The lateral view, taken the same day, showed the odontoid process intact and the atlas displaced forward and tilted to one side.

June 23 forcible reduction was accomplished, as described later in the treatment.

She was held in a cast for twelve weeks and careful active and passive motions were then encouraged. Since the compensatory rotation did not disappear, traction was applied for two weeks, which markedly improved her condition. Another plaster collar was applied for six weeks with the head in the normal position, and on the removal of this collar the head was in good position but rotation was still restricted.

She was left without support during the day but had slight traction applied during her sleep. When last seen, there was no deformity or restriction of motion.

A roentgenogram, May 19, 1930, showed the atlanto-axial joint spaces to be symmetrical. The scoliosis and rotation of the lower cervical spine were markedly diminished. The lateral view on the same date showed almost normal relations of the atlas to the axis. After this time the immobilization was discontinued except for slight traction during her sleep.

7 West Madison Street

ABSTRACT OF DISCUSSION

DR FRANK C MURPHY, Chicago. If this is done under forced manipulation, is there ever any possibility of catching the odontoid process forward on the cord and injuring the cord?

DR C A STONE, St Louis. I should like to ask why the authors feel it is necessary to keep traction on these patients for that period of time. I do not think that one needs to be particularly afraid that damage is to be done in manipulating these necks if a little care is taken about it, if one is not rough, as is a chiropractor, and if one will depend more on manipulation than on traction. Some necks can be retained with an ordinary Thomas collar. Some need a plaster collar to hold them in position.

DR ROBERT D SCHROCK, Omaha. These patients become so tired of the plaster collar fixation that it requires all the facilities of the physician's mind to persuade them that that thing is still a little longer necessary to wear. Owing to the fact that I was not able to persuade some individuals, particularly those with cervical spine injuries, that it was necessary to remain so for longer than twelve weeks, it became necessary to devise a simpler type of fixation and something that could be used in minor cervical injuries or for the period of less rigid fixation when the plaster collar is removed. I employ a comfortable, light, readily applied and unfortunately readily removable piece of apparatus that can be made by any mechanic. It gives a nice fixation, the basis being a sternal piece and the portion holding the head on the chin cup being simply a piece of molded metal covered with leather. It is adaptable for this later stage of the serious cervical spine injury or for the minor cervical or painful necks, the arthritic type.

DR HAROLD SWANBERG, Quincy, Ill. All of the authors cases were in children, but this condition may occur in adults. I saw an atlanto-axial dislocation in an adult which occurred during the World War. A soldier aged 22 suffered from tonsillitis and measles. A month after the tonsillitis his tonsils were removed. The evening of the operation his neck became suddenly stiff, remaining in that condition when he was sent to the general hospital where I was stationed. I first saw him six months after the onset of the stiffened neck. He then had a rigid painful neck with depressed chin and a roentgen diag-

nosis of osteoarthritis of the first and second cervical vertebrae. The only other clinical symptoms were persistent headaches. Unfortunately, the first roentgen diagnosis was incorrect, there being no evidence of osteoarthritis but of a complete anterior dislocation of the atlas. I presume it will be concluded that this dislocation was a traumatic one, occurring at the time of operation, with the operation performed under general anesthesia. The tonsils were removed under a local anesthetic. The soldier and the surgeon stated that no undue force was used. The pain and stiffness in the neck came on suddenly, the night of the operation. Unfortunately, the condition was not correctly diagnosed for six months. At that time, the patient was given a general anesthetic and suspended by his neck, and various manipulative efforts were made but the dislocation remained unchanged. Every anterior dislocated atlas that I have examined shows one clinical sign not mentioned by the authors. The posterior nasal pharynx is greatly reduced in size because of the projecting anterior arch of the atlas. By placing the finger in the mouth, one can readily palpate the large projection.

DR E J BERKHEISER, Chicago. Undoubtedly this is not a new thing, but it has not been diagnosed as often as it should have been. It is, I think, because good roentgenograms cannot be obtained with the extreme deformity and because the roentgenograms are not good that they are usually interpreted as being negative. In regard to the length of time of treatment, I feel that this is really quite variable. We may have treated them with traction longer than was necessary. Probably the necks could be held shortly after the reduction with some simple appliance.

Clinical Notes, Suggestions and New Instruments

APOPLEXY OF KIDNEY BED

ANDREW BONTHIUS, M.D., PASADENA, CALIF.

Raye, in 1839, first reported a case of spontaneous perirenal hemorrhage. Wunderlick, in 1846, who was the second to report a case, called it apoplexy of the kidney bed. There have been sixty-two cases reported since then, very few of which were correctly diagnosed preoperatively or ante mortem.

Following is the report of another case.

A woman, aged 55, 5 feet 8 inches (173 cm) tall, weighing 200 pounds (91 Kg), a widow working as a domestic up to the onset of the present illness, had enjoyed good health previous to 1923. In that year, she had had a panhysterectomy with complete recovery, and later influenza. In 1924 she had extensive burns of the arms, hands, face and dorsal surface of the trunk, and was in a hospital thirty-five days. She apparently completely recovered.

In 1925 she had a cholecystectomy and an appendectomy during convalescence albumin and granular casts were found in the urine and frequent erythrocytes and for several days she suffered excruciating pain in the suprapubic and lumbar regions. The cause of this pain was undetermined. She was in the hospital forty-eight days and completely recovered.

The present illness began Sept 4, 1929 with frequent urination that lasted only that day. September 5 while working in the kitchen she had a terrific pain in the upper left quadrant of the abdomen. She had no urinary disturbances since coming under observation. September 8 the rigidity and pain in the left rectus were sufficiently decreased to permit the palpation of a mass the size of a large orange near the posterior abdominal wall in the region of the left kidney. There was a slight rise in temperature. The blood pressure was 140 systolic and 80 diastolic, pulse 72 and respiration 18.

The mass increased in size from day to day.

On cystoscopic examination the left ureter appeared to be inflamed and the right one normal. Ureteral catheters were inserted to the pelvis. The trigon and vesical neck were inflamed, the inflammation extended to the posterior urethra. The bladder capacity was 200 cc. Phenolsulphonphthalein appeared first in the left side in five and one half minutes and

in the right side in four minutes a total of 40 per cent was eliminated in fifteen minutes.

The catheterized urine from the bladder amounted to 11 cc and contained a few erythrocytes and leucocytes. The urine collected from the right kidney and from the left kidney, each contained some erythrocytes and leucocytes.

The bilateral kidney function test was as follows. The amount in the right kidney was 5 cc, 12 per cent; the amount in the left kidney was 6 cc, 14 per cent; a total of 26 per cent.

The bladder culture gave a pure growth of *Staphylococcus albus*.

A trace of sugar was shown in two of four different urinalyses. Blood counts taken between September 7 and 20 revealed erythrocytes, from 3,500,000 to 4,440,000; leucocytes, from 8,900 to 5,300; and hemoglobin, from 70 to 47 per cent.

Films of both kidneys taken Sept. 11, 1929, without catheters in position showed that the right kidney was normal in size, shape and position but that the left was enlarged to more than double its normal size, and was nearly round. Its lower pole lay about 5 cm above the iliac crest. The roentgenologic diagnosis was enlarged left kidney.

September 19, a single anteroposterior view of the urinary tract was taken with a catheter in the left ureter and the left kidney pelvis injected with opaque material. The kidney pelvis and its calices appeared large but not distended, and the secondary calices showed fairly clear cut ends. The shadow of the kidney pelvis and its calices appeared to be in the upper half of a soft tissue mass which extended from the eleventh rib downward to slightly below the crest of the ilium measuring about 20 cm. This soft mass had been repeatedly seen on previous films. I believe it was due to a mass in close relation to the left kidney.

The size of the mass increased from day to day until by palpation it became apparently about 6 inches in diameter.

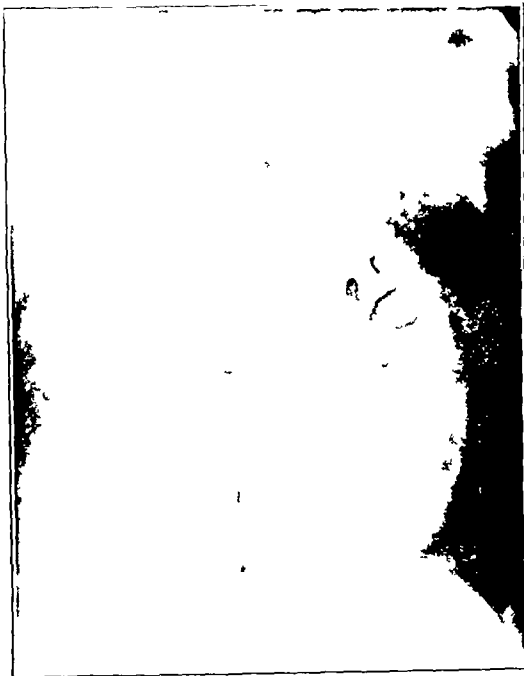


Fig 1—Left kidney shadow prior to nephrectomy

Lenk and, later, Meyer stated that the syndrome of (a) severe pain in the abdomen in the kidney region (b) internal hemorrhage and (c) evidence of tumor in the abdomen signally increasing in size are usually present in perirenal hemorrhage. A review of the accompanying blood reports robs one of any certainty that an internal hemorrhage has taken place. There were only two constant and distinct symptoms present that warranted more than a working diagnosis preoperatively: they were (a) pain in the abdomen, left side and (b) a large mass the origin of which could be determined only tentatively. The

difficulty was increased by the similarity of the chemical and microscopic examinations of the urine from the left and the right kidney.

The preoperative diagnosis made was (1) hypernephroma of the left kidney or (2) retroperitoneal tumor in the left side.

An exploratory operation was performed, September 21, by Dr W. F. Manuel. Under gas oxygen anesthesia, a curved incision was made through the skin of the left flank and down

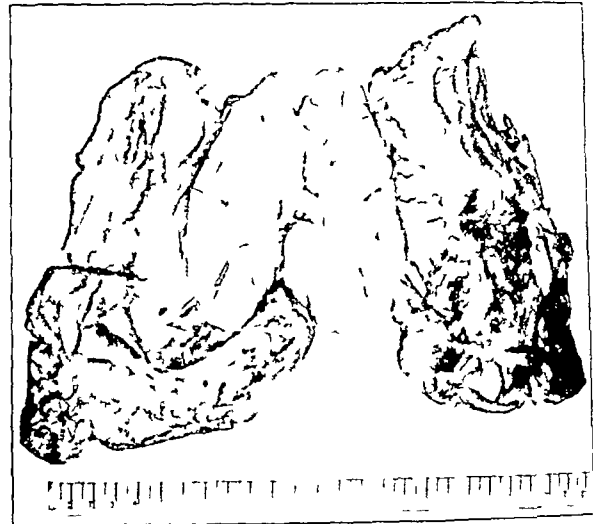


Fig 2—Hematoma and kidney removed en masse

to the perirenal fat. Exploration revealed a smooth, firm subcutaneous tumor about the size of a large coconut, easily free from the surrounding fat, movable, but firmly attached to the kidney. It was somewhat mottled gray and granular in appearance, resembling an organized blood clot. The tumor which was easily delivered through the wound, was removed. There was little bleeding. The remaining fatty tissue approximate so as partially to fill the large cavity, and three wicks were inserted for drainage. The wound was closed in layers and the patient returned to the ward in good condition.

The wound drained freely for ten days. The drainage tube was removed October 4. The patient was up, October 11 and discharged October 13, three weeks after the operation.

A phenolsulphonphthalein test on the right kidney totaled 40 per cent, October 8.

The pathologic report by Dr R. M. Crumrine showed a specimen weighing 688 Gm, comprising a kidney which appeared normal and measured 11 by 5 by 4.5 cm. Attached at the hilus was a much larger mass measuring 17 by 9 by 6 cm, that appeared to be perirenal fat infiltrated with partly organized blood clot. The kidney hilus was attached to the mass by two or three fibrous bands. The mass itself weighed 550 Gm, was covered by a thin capsule, and had the shape of an enormous suprarenal gland. The gross appearance of this specimen suggested a hemorrhage into the suprarenal. There was no suggestion of cancer. The kidney proper showed a smooth subcapsular surface and was normal in every respect, except that there was increased fat in the pelvis and a few small cysts.

The histologic slides showed organizing blood clot intermingled with fatty tissue. There were alternate areas of fresh cells and fibrosed organized clots, indicating oozing or repeated hemorrhage for at least ten days.

Sections from the kidney proper showed it to be in good condition consistent with the age of the patient. There were only rare fibrosed glomeruli.

The walls of the arterioles were slightly thickened, but not more than would be expected at this age. There was no atheroma.

There was slight definite acute inflammatory reaction of interstitial distribution apparently invading from the hemorrhage material at the hilus and not a pyelitis.

No suprarenal gland or other structure was shown. There was no evidence of malignancy.

The diagnosis was massive slow hemorrhage into the fat about the hilus, of undetermined origin

SUMMARY

The patient was apparently entirely well at the time of the sudden onset

She had not sustained any known injury recently prior to the acute attack

The kidney function was normal

Microscopically the ureter and pelvis of the left kidney were normal

The pain in the left half of the abdomen was severe

A tumor mass was palpable in the left kidney region. It steadily increased in size for about ten days but there was no evidence of internal hemorrhage

A hematoma of the kidney bed completely enveloping the left kidney was resected *en masse*

Microscopically, the origin of the hemorrhage could not be determined and was extracapsular and into the adipose structure of the kidney bed

It was a spontaneous hemorrhage into the kidney bed

The patient now one year after the date of the operation is well and earning her livelihood

65 North Madison Avenue

COLD URTICARIA AND HISTAMINE ALLERGY: REPORT OF A CASE*

L. MINOR BLACKFORD, M.D., ATLANTA, GA.

In the last four years, Thomas Lewis and his associates have done much work on the effect of cold on the human skin. They have proved the unusually high histamine content of the normal skin (1:100,000) and have devised ingenious experiments to show that histamine or a substance like histamine is responsible for the urticarial wheals sometimes produced by cold. In one

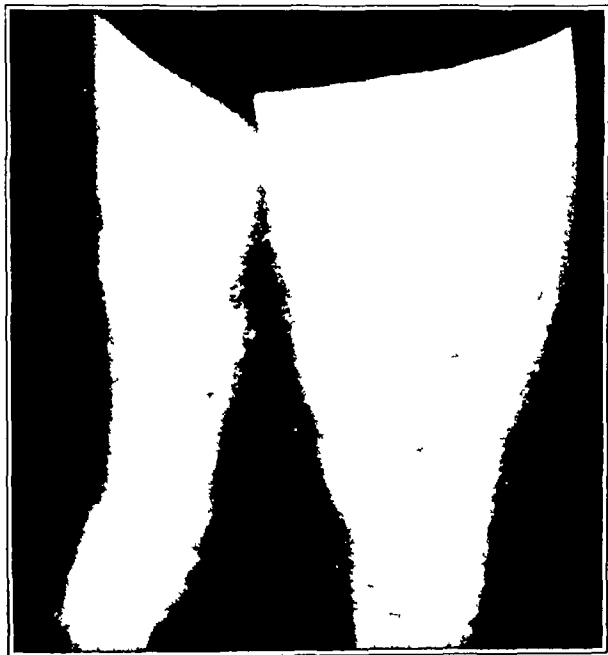


Fig 1—Wheals ten minutes after a twenty minute bath at 20° C

of these papers¹ they reviewed the literature and assembled two small groups. In group 1 urticaria was complicated by transient hemoglobinuria and syphilis was usually present. The first case was reported in 1879. Hemoglobinuria and syphilis were not present in group 2, the first case of which was reported

in 1872. Probably wheals from cold have been observed more often than they have been reported. In 1929, Horton and Brown² reported three cases and assembled three more, in which marked systemic histamine like reactions occurred in allergy due to cold. In five of these six, the reactions developed following swimming. One patient in this series was a boy, aged 15, who had received tetanus antitoxin three years previously. In this case the effect of the injection of histamine on



Fig 2—Dermographia from stroking with a fingernail

the blood pressure was studied. After the administration of 0.1 mg, a change was not observed in blood pressure or pulse rate but the boy complained that his face felt hot. After 0.3 mg his systolic blood pressure dropped 9 mm and his pulse increased from 72 to 92. Hemoglobinuria and syphilis were not present in any of these six cases.

REVIEW OF CASE

One cool morning a boy aged 17 on leaving a swimming pool was observed on account of the dusky appearance of the lower half of his body. After swimming he had stood in water above his waist for twenty minutes watching children play. The dusiness extended from the level of the xiphoid process down and over this area were many irregular (probably from coalescence) wheals. Some of these were only a few millimeters in diameter others were perhaps 2 by 6 cm. Considerable itching and burning developed both of which were made worse by scratching. The discomfort passed away in half an hour.

The patient was an only child. His mother died apparently as the result of an accident. His stepmother was subject to hay fever. His previous illnesses included only measles as a child and influenza with pneumonia in 1922. In 1926 he had received diphtheria toxin antitoxin. In 1928 he was pronounced immune to scarlet fever. In 1929 he had been vaccinated again to typhoid and smallpox. He considered himself unusually susceptible to poison oak. Following a small nail wound in August 1929 he was given a large dose of tetanus antitoxin. Four days later he developed a severe generalized rash and was real sick for five days. He had been taking a cold bath each morning and was a prominent athlete at his school.

* Read before the Fulton County Medical Society, Oct. 2, 1930.
1. Harry K. E. Lewis, Thomas and Vaughn J. M. Hemoglobinuria and Urticaria from Cold Occurring Singly or in Combination. Observations Referring Especially to the Mechanism of Urticaria with Some Remarks upon Kayser's Disease. *Heart* 14: 105 (March 24) 1929.

2. Horton B. T. and Brown C. E. Systemic Histamine Like Reactions in Allergy Due to Cold. *Am. J. Med. Sc.* 178: 191 (Aug.) 1929.

Physical examination, including ophthalmoscopy, was essentially negative. At the first determination the systolic blood pressure was 138, the diastolic 86 the boy was obviously excited. Subsequently the systolic blood pressure varied from 114 to 120, and the diastolic from 70 to 84. Hemoglobin was 17.9 Gm and the red cell count was 6,480,000 both in the upper limits of normal according to Wintrobe and Miller.³ The differential count was also normal eosinophils numbering 3 per cent. The Wassermann and Kahn tests and urinalysis were negative.

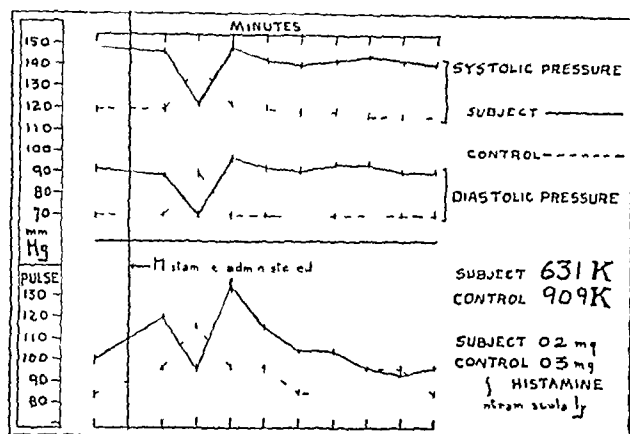


Fig. 3—The effect of histamine on the pulse and blood pressure of the subject.

Experiment 1 A beaker containing ice water was held on one thigh for about five minutes and one of the same size containing tap water on the other thigh. The pink area left from the beaker with tap water disappeared in a few seconds; the pink area from the cold beaker lasted more than fifteen minutes and seemed to be slightly elevated and rather warmer than the surrounding skin. In a few minutes several wheals appeared varying from 4 to 8 mm in diameter.

Experiment 2 A small block of ice was applied to the thigh for about four minutes. The skin in contact with the ice became markedly blanched and was surrounded by a slightly elevated areola of deep pink. Small wheals appeared in the center.

Experiment 3 Two-tenths milligram of histamine was injected into the subject, and, as a control, 0.3 mg (proportionate to the greater weight) was injected into a normal man, aged 35. Except for flushing of the face with a sensation of warmth in both persons, symptoms were not experienced. A wheal appeared at the site of injection in each person larger in the boy. The subject's systolic pressure dropped more than 20 points two minutes after the hypodermic injection (although not below his systolic pressure at subsequent examinations). At the same time the control's systolic pressure went up.

Experiment 4 The front and back of the thorax was stroked with a comb. Dermographism was pronounced. The subject had grown accustomed to the experiments, and the pulse and blood pressure hardly varied over fifteen minutes. The pulse was 88, the systolic blood pressure 118, the diastolic 76. The skin of the thorax was pink; there was no definite flushing of the face or sensation of warmth.

Experiment 5 The subject sat for twenty minutes in a tub of water at 20°C (68°F). The dry was warm. The skin of the submerged parts became pink and irregular white blotches gradually appeared. There was slight shivering before he left the tub, which was probably responsible for a moderate rise in blood pressure. In less than five minutes the eruption appeared. There were no general symptoms. Twenty-five minutes after leaving the tub, the blood pressure was 122 systolic and 86 diastolic.

COMMENT

The boy was on a brief visit to Atlanta, and it was therefore impossible to repeat the experiments. Facilities were not available to detect fine changes in the temperature of the skin. The possible etiologic significance of the antitoxin of diphtheria and

tetanus is mentioned. There was no history to suggest hemoglobinuria following the urticaria, though actual examination was not done. Lewis and his co-workers, and Horton and Brown were careful to state that reactions in such cases are due to a substance like histamine or very probably to histamine itself.⁴

SUMMARY

A case is presented in which urticarial wheals appeared following prolonged exposure to cold water and in which the response of the blood pressure to histamine was greater than in the control case.

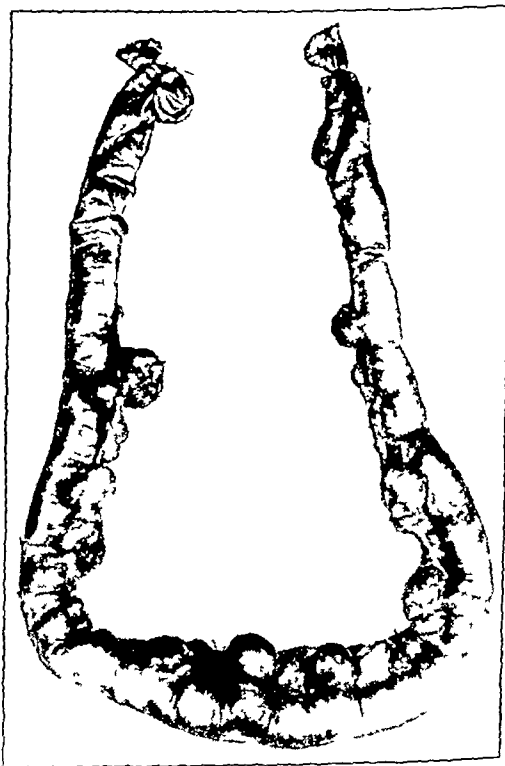
Medical Arts Building

MULTIPLE DIVERTICULA OF JEJUNUM WITH RESECTION*

JOHN R. BOLING, M.D., TAMPA, FLA.

In March 1930 I¹ reported because of its rarity, a case of multiple diverticula of the small intestine. Rothschild, in 1925, collected thirty-three case reports of diverticula of the jejunum, from articles by Balfour Helvestine,² Watson and others.³ Of this number nineteen were multiple, and ten of them were not discovered until operation.

The case I reported was of a man, J. C. H., aged 58, who was operated on in November 1929, for intestinal obstruction. At operation I found in the small intestine an enormous number of diverticula, ranging from the size of a pea to that of a walnut. There was only one of the latter size. It was thought at that time that the involved area was the last part of the jejunum and the first of the ileum. The obstruction was relieved and an enterostomy was done. Since the diverticula did not seem



Section of jejunum 153 cm in length with diverticula

to be causing any trouble at this time nothing more was done. The convalescence was smooth and he left the hospital in good condition. Two months later a gastro-intestinal series was made.

- * Read before Midland Medical Society, Orlando, Fla., Oct. 8, 1930.
1. Boling, J. R. Multiple Diverticula of Small Intestine. J. A. M. A. 95: 267 (July 26) 1930.
2. Rothschild, N. S. Diverticula of the Jejunum. Ann. Surg. 82: 250 (Aug.) 1925.
3. Helvestine, F. Jr. False Diverticula of Jejunum. Surg. Gynec. Obst. 37: 1 (July) 1923.

³ Wintrobe, M. M. and Miller, M. W. Normal Blood Determinations in the South. Arch. Int. Med. 43: 96 (Jan.) 1929.

with the hope of demonstrating the diverticula. This the roentgenologist failed to do.

Aug 5, 1930, the patient was again admitted to the hospital, with symptoms of intestinal obstruction. Since his discharge in November, he had been in good health, carrying on the work of a farmer.

His present attack began twelve hours before being admitted to the hospital, with general abdominal pain, nausea and vomiting. He took several purgatives with poor results. When he entered the hospital he was comfortable, the abdomen was flat, and an enema gave fair results, both flatus and feces being passed. The white cell count was 10,800, with 80 per cent polymorphonuclears, hemoglobin was 80 per cent, and the urine was negative. He felt all right for the next thirty-six hours, when he was again seized with severe cramping pain, nausea and vomiting. There was general abdominal tenderness with some rigidity and distention. Enemas gave no results and an operation was decided on, the diagnosis being intestinal obstruction and multiple diverticula of the small intestine.

An incision through the old right rectus scar revealed an obstruction caused by the looping of ileum about the adhesion of the enterostomy. This was freed by dissecting the enterostomy area away from the abdominal wall. The intestine was so distended and difficult to control that a suction tube was inserted into the distended loop and a large amount of gas and liquid material was removed.

Since the patient was in good condition, resection of the diverticula-bearing intestine was decided on. On complete exposure of the involved intestine, it was found that the diverticula began about 1 foot (30.5 cm) from the ligament of Treitz and continued down for about 60 inches (152 cm). I was surprised to find the diverticula enormously increased in size since the previous operation. There seemed to be about the same amount of intestine involved, but where before there were three or four small diverticula to a certain space there was now one large one, several small diverticula evidently coalescing to form one large one. Resection of the entire involved intestine was done, an end-to-end anastomosis being made.

He left the table in good condition and reacted well, without any postoperative nausea or vomiting credit for this being largely due to the use of tribrom ethyl alcohol as an anesthetic, only 3 ounces (89 cc) of ether being required.

He has since been entirely free from symptoms and is now back at work.

The section of jejunum was examined by Dr Herbert Mills, who reported that it measured 153 cm. Scattered along the mesenteric surface either in close proximity or at intervals up to 7.5 cm apart were fifty three sessile diverticula, ranging in size from 4 mm in diameter to 3.5 by 5 cm in diameter, averaging about 2 cm. The walls of these diverticula were very thin and translucent the openings of the largest diverticula communicating with the main lumen easily admitting the finger. No other gross pathologic changes were observed.

Microscopic sections showed the mucosa resting on the serosa with no muscular wall between.

I am certain that had roentgenograms been made when the diverticula were large as at the time of the last operation and in the upright position as stressed by Dr J Case in a letter to me the diverticula would have readily been seen.

As I stated in my previous article the causes of diverticula are narrowed down to three, summed up by Sheppe,⁴ in 1924, as

1 Increased abdominal pressure caused by rectal and vesical tenesmus.

2 Atrophy of the inner circular layer of the intestinal musculature.

3 Traction on the intestine by mesenteric vessels shortened by sclerosis and adhesions.

The vast majority are of the false type as was this one.

The history of attacks of indefinite abdominal pain over a period of several years in an old man was suggestive.

The lack of muscular tone in the intestine probably had to do with the first obstruction the last was purely a postoperative one.

120½ First National Bank Building

⁴ Sheppe, W. M. False Diverticula of Jejunum. J. A. M. A. 5: 1118 (April 5) 1924.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY OF THE AMERICAN MEDICAL ASSOCIATION HAS APPROVED THE FOLLOWING ARTICLE

H. A. CARTER, Secretary

DEVICES ALLEGED TO CURE BALDNESS BY MEANS OF ULTRAVIOLET AND INFRA-RED RAYS

W. W. COBLENTZ, PH.D.

WASHINGTON, D. C.

Never has there been such a widespread attempt as today to foist on an unsuspecting and trusting public all sorts of alleged cure-alls to relieve its ills and to keep it in health.

Prominent among these panaceas is the exploitation of ultraviolet and infra-red rays. The mere mention of "infra-red rays" creates in the mind of many persons a feeling that this is something new and mysterious that they have missed, when, as a matter of fact, it is difficult to think of a warm object that does not emit infra-red rays.

When an object is heated to a higher temperature than its surroundings, an excess of infra-red rays passes from it to the surrounding objects. Examples of sources of infra-red rays are arc lamps, incandescent lamps, coal fires, steam pipes, and hot stoves. Because of their low temperature, the infra-red rays emitted by hot water bags and electrical heating pads are of low intensity, and hence they are insignificant in comparison with the amount of heat that is obtained by conduction, by having the hot pad or hot water bottle in contact with the body. Of course it sounds more impressive to speak of infra-red rays than to speak of the application of heat by conduction, by direct contact of the pad with the body.

The trite old saying that a little learning is a dangerous thing seems thoroughly exemplified by the arguments and claims propounded by well meaning salesmen of all sorts of devices offered as cure-alls. Innumerable fallacies are promulgated, especially regarding the penetrating properties of the ultraviolet and the infra-red rays.

It is pathetic and at times ludicrous to hear a promoter of some new device insist that the alleged curative effects are brought about by infra-red rays when common sense observation (exposure of the hand or face to the device) indicates that practically no infra-red rays are emitted and that the heat that is imparted to the body is obtained by conduction by direct contact of the device with the body. To admit this fact makes the device appear commonplace, but "infra-red rays" sounds more impressive.

A ropelike device containing a heating coil, surrounded with a piece of turkish bath towel, which is to be placed over the gums (i. e., surround the mouth, on the outside) was offered as a cure for pyorrhea. The inventor claimed that the infra-red rays had cured his wife of this disease. The infra-red rays emitted were too small in amount to have any effect and even if emitted they could not penetrate the skin.

Another example of infra-red hokum is a dermal-ray cap for making hair grow. This cap was supposed to cure baldness by infra-red rays—a new discovery. As a matter of fact the few infra-red rays that were emitted were of long wavelength, which cannot penetrate the

skin deeper than a small fraction of a millimeter. As will be described later, the heat is obtained by conduction. Granting that infra-red rays have the power to prevent baldness or restore the hair, then in electrical toaster, which is much hotter and emits more infra-red rays, would be more useful than the cap, but, of course, for a bald-headed man to wear an electrical toaster on top of the head for twenty minutes each day would look undignified. So would an electrical heating pad or a hot brick. Hence, the bald-headed portion of the public, ever ready to try a new thing, will probably try the cap, because it is lined with red silk and is said to emit infra-red rays—which it does, but not in sufficient intensity to be effective. Much more heat is obtained by conduction.

Another bit of hokum is a so-called violet ray lamp, consisting of a spark coil to which is attached a glass tube that terminates in a flattened glass bulb that emits a blue glow when it touches the body. The function of this glass tube is to provide a high resistance to the electric current which comes from the spark coil, so that the patient will not feel the shock too severely. The usefulness of such an induction current in the treatment of some diseases is recognized. But to ascribe the healing to the ultraviolet rays emitted by the glass bulb electrode is misleading, for, even if these rays could pass through the glass walls of the bulb they would be too weak in intensity to be effective for therapeutic purposes. There is nothing mysterious in such a device, which is easily made from an old Ford spark coil and a dry battery. Fortunately, the chain drug stores sell them for \$1.39, more or less, and that is not a great loss. But it should not be used as a source of ultraviolet rays, because what few waves are generated are trapped by the glass bulb of the hand electrode.

THE THERMOCAP

The "Thermocap" examined consisted of a cylindrical piece of fiber, attached to a bowl-shaped reflector of aluminum which supported an ordinary Edison lamp socket. The radiator or source of violet rays consisted of an 8 candle power, 110 volt, helical carbon filament incandescent lamp in a bulb of blue glass of the ordinary commercial variety used for decorative purposes and consuming about 0.20 ampere on 110 volts, or between 22 and 23 watts.

The lamp was screwed into the socket at the apex of the dome of the cap and did not make contact with the head. The heat was applied to the scalp principally by radiation, and by conduction through the surrounding air. The device was unwieldy, top heavy, and uncomfortable to wear. The blue bulb lamp was used because the yellow and red rays in the clear glass bulb were supposed to inhibit the biologic action in growing hair.

Thermometric Tests—When the cap was placed on the head, with the room temperature at 22 C (about 72 F) but with no current flowing through the lamp, a thermometer placed at a distance of about 1 cm (one-half inch) above the scalp registered a little above 27 C (81 F). When the lamp was in operation, the temperature increased to 57 C (135 F, at some points, to 58 C, or 138 F). The temperature of the skin is about 36 C (96.8 F). From this, it may be seen that the heat of the lamp can maintain a temperature of about 21 C (57—36) above that of the scalp, while, as noted in the next caption, the blue rays emitted by the lamp can raise the temperature by less than $\frac{1}{2}$, 000 degree C.

Radiometric Tests—The heating effect of the radiation from the lamp was determined by means of a thermopile. Three lamps were tested, all giving closely the same results.

It was found that at a distance of about 4 cm ($\frac{1}{4}$ inches) from the lamp, which is approximately the distance between the scalp and the lamp, the total radiation from the lamp could raise the temperature of a blackened surface by about 1 to 2 degrees C. On the other hand, the intensity of the violet and ultraviolet radiation emanating from this lamp was found to be less than $\frac{1}{10,000}$ of the total radiation emitted. Hence, the rise in temperature that the violet rays could produce was less than $\frac{1}{210,000}$ ($\frac{1}{2}$, 000) degree centigrade.

Spectral transmission measurements were made on a single thickness of one of these lamp bulbs submitted for test, showing a transmission of about 60 per cent in the blue. In other words, if a similar carbon filament were used in a bulb of clear glass instead of blue glass, the intensity of the blue (or shorter) wavelength emitted would be almost double that obtained from the blue lamps employed in the thermocap.

Sunlight Tests—In contrast with the carbon filament, which emits but little violet radiation (even when the filament is enclosed in a clear glass bulb that permits the rays to come out of the bulb), the sun, owing to its high temperature, emits a large amount of blue and violet radiation.

Measurements were made on the blue rays of June sunlight transmitted through a single thickness of a fragment of the blue bulb lamp belonging to a thermocap. It was found that the amount of blue and violet radiation from the sun that is transmitted through this blue glass bulb is sufficient to raise the temperature of a black absorbing surface by about 0.18 degree C when placed in direct sunlight. This is equivalent to a rise in temperature of about 0.3 degree C without the blue glass. In contrast, owing to the low operating temperature of the carbon filament, the violet radiation emitted through the blue glass bulb could raise the temperature only by $\frac{1}{2}$, 000 degree.

In other words, the blue rays of full sunlight can produce a heating effect that is from 10,000 to 15,000 times greater than that of the carbon filament lamp. Near a south window, the intensity of the blue rays of the sky would be from 5 to 10 per cent of this value, or from 500 to 1,500 times that of the blue bulb carbon filament lamp. If the blue rays of such a lamp have a biologic effect in stimulating hair growth, then it should be especially useful to bald-headed visitors to amusement houses illuminated with blue lamps.

THE DERMORY CAP

The "Dermory Cap" examined consisted of an ordinary black silk skull cap lined with red silk. Between the inner red silk lining and the outside of the cap were several turns of asbestos-covered resistance wire, similar to that used in the ordinary felt-covered electrical heating pads. The device consumed about 0.45 ampere on 110 volts, or about 50 watts. Whether the red silk lining was supposed to increase the effectiveness of the infra-red rays in stimulating hair growth was not disclosed. At any rate it would be suggestive.

The dermory cap was evidently intended to be worn in contact with the scalp. At any rate it was unavoidably in contact with the scalp. Hence the heat transfer from the cap to the head was almost entirely by conduction and practically nothing by infra-red rays, as claimed.

Thermometric Tests—The physiologic effect of radiant heat and conducted heat on the skin is to stimulate the nerve endings in the skin, which expands the capillary blood vessels, causing an increase in the blood circulation and erythema.

Accepting this as a basis, I tested the dermoray cap to determine (1) how great a heating effect could be produced on the surface of the skin by the infra-red rays (radiant heat) emitted, and (2) how much heating could be produced by conducted heat.

When the cap was placed on the head, with the room temperature at 22 C (72 F) but with no electric current flowing through the heating wires, a thermometer inserted between the scalp and the lining of the cap registered 36 C (97 F). When the cap was heated, the temperature increased to 59 C (139 F), which was comfortably warm.

Radiometric Tests—The radiant energy test, made by using a sensitive thermopile of bismuth-silver, showed that (assuming that the cap is not in contact with the scalp) the infra-red rays emitted could raise the temperature of the scalp by less than 0.025 degree C, whereas the conducted heat raised the temperature by more than 23 (59—36) degrees C. In other words, the heating by conduction was at least 920 (23—0.025) times more effective than that of the infra-red rays.

But, since the cap touches the head, the heat transfer by infra-red rays is reduced proportionately. If two thirds of the area of the cap is in contact with the scalp, the conducted heat is at least 2,760 (920×3) times as effective as the infra-red rays.

These tests show that practically all the heat is transferred from the cap to the head by heat conduction and only an insignificant amount of heating is produced by infra-red rays. But even if an appreciable amount of infra-red rays were emitted, it would still remain to be proved that the cap will grow hair. Suppose the inventor had claimed that the heat is transferred from the cap to the head by the more obvious and by the really more effective means, viz., as conducted heat, he still would have to prove that it will grow hair.

2737 Macomb Street

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, Secretary

PROCAINE BORATE—1 amino benzoyl 2 diethylamino ethanol-penta *m*-borate. β diethylaminoethyl-*p*-amino benzoate penta *m* borate. $\text{C}_6\text{H}_5\text{NHCOOCH}_2\text{N}(\text{C}_2\text{H}_5)_5\text{HBO}$ —A borate formed by the interaction of *p* aminobenzoyl diethylamino-ethanol (procaine base) and boric acid in the same organic solvent. Procaine borate contains 51.8 per cent of *p* amino-benzoyl-diethylaminoethanol.

Actions and Uses—Procaine borate closely resembles procaine hydrochloride in its actions and uses. The molecule is heavier than that of procaine hydrochloride but the toxicity and the anesthetic activity are closely proportional to the procaine base which they contain. When injected subcutaneously, procaine borate exerts a prompt and powerful anesthetic action. It is nonirritant. The testimony concerning its activity when applied to mucous membranes lacks uniformity.

Dosage—For infiltration anesthesia, solutions of 0.5 to 1 per cent for blocking nerves from 1 to 2 per cent for tonsillectomy 0.5 to 1 per cent, mucous surfaces, 2 to 20 per cent, dependent

on the location and the depth of anesthesia required. Its action is enhanced by the addition of a small amount of epinephrine, as in the case of procaine hydrochloride. Owing to the smaller content of the base in procaine borate, the total dose may exceed that of procaine hydrochloride by about 50 per cent.

Procaine borate occurs as a fine white odorless crystalline powder when applied to the tongue it possesses a slightly bitter taste followed by a sense of numbness. permanent in air freely soluble in water about 1 in 4 soluble in alcohol insoluble in acetone benzene chloroform and ether. Its aqueous solution (1 in 10) is alkaline to litmus dissociating hydrolytically. Procaine borate melts at 163 to 166 C.

Transfer about 1 Gm of procaine borate to a suitable Squibb separatory funnel add 25 cc of water followed by the addition of 5 cc of normal sodium hydroxide solution and extract with 5 successive portions of chloroform using 25 cc 20 cc and 10 cc respectively evaporate the combined chloroformic solutions to dryness dissolve the oily semisolid base in 25 cc of a 2 per cent solution of hydrochloric acid portions of the solution respond to the tests for procaine hydrochloride U. S. P. \ p 305. Dissolve 0.1 Gm of procaine borate in 2 cc of methyl alcohol add 5 drops of sulphuric acid and ignite the mixture a green mantle is imparted to the flame. Dissolve 0.5 Gm of procaine borate in 50 cc of water separate portions of 10 cc each yield no opalescence with 1 cc of diluted nitric acid and 1 cc of silver nitrate solution (chloride) no turbidity with 1 cc of diluted hydrochloric acid and 1 cc of barium chloride solution (sulphate) no coloration or precipitation on saturation with hydrogen sulphide (salts of heavy metals). When tested for arsenic according to the U. S. Pharmacopeia \ the product should meet requirements for the arsenic (p 428 Arsenic Test). Transfer about 0.5 Gm procaine borate accurately weighed to a 50 cc glass stoppered cylinder add 25 cc of chloroform and shake the cylinder and contents for five minutes allow to stand until the insoluble portion separates filter, wash the cylinder and the insoluble material onto the filter with two portions of chloroform using 15 cc and 10 cc respectively adding the washings to the original filtrate evaporate the combined filtrates to dryness in a tared beaker and dry to constant weight over sulphuric acid in a partially exhausted desiccator the oily residue should not exceed 2 per cent (limit of uncombined *p* aminobenzoyl diethylaminoethanol).

Dry about 1 Gm of procaine borate accurately weighed over sulphuric acid in a partially exhausted desiccator for forty eight hours the loss does not exceed 2 per cent. Transfer about 0.4 Gm of procaine borate accurately weighed to a suitable Squibb separatory funnel add 25 cc of water followed by the addition of 2 cc of normal sodium hydroxide solution extract with six successive portions of chloroform using 25 cc 20 cc 15 cc 10 cc 10 cc and 10 cc respectively evaporate the combined chloroformic solutions to dryness in a stream of warm air and dry to constant weight over sulphuric acid in a partially exhausted desiccator dissolve the oily residue in about 10 cc of previously neutralized alcohol add 10 cc of tenth normal hydrochloric acid solution followed by the addition of an equal volume of water determine the excess of acid by titration with fiftieth normal sodium hydroxide solution using methyl red as an indicator the amount of tenth normal hydrochloric acid solution consumed corresponds to not less than 50.0 per cent nor more than 52.0 per cent *p* aminobenzoyl diethylamino-ethanol calculated to the dried substance. Titrate about 0.4 Gm of procaine borate to a steam distillation apparatus and determine the m boric acid according to the Gladding method of distillation and subsequent titration (See Leach Food Inspection and Analysis ed 4 p 884) the amount of tenth normal sodium hydroxide solution consumed corresponds to not less than 47.0 per cent nor more than 48.5 per cent m boric acid (HBO) calculated to the dried substance.

Procaine Borate-Searle—A brand of procaine borate N N R

Manufactured by G. D. Searle & Co. Chicago. No U. S. patent or trademark.

Impules Procaine Borate and Epinephrine 1 cc. Procaine borate Searle 0.0216 Gm ($\frac{1}{5}$ grain) and epinephrine 0.00017 Gm ($\frac{1}{100}$ grain) in water to make 1 cc. Each ampule contains more than 1 cc. of solution.

LIVER EXTRACT-FAIRCHILD—A complete concentrate of an aqueous extraction of fresh edible liver, freed of connective tissue lipid and heat coagulable protein. It is marketed in vials each containing the material derived from 100 Gm of the fresh liver.

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THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY FEBRUARY 14 1931

DEATH FROM EXPLOSION OF MIXTURE OF ANESTHETIC GASES

It has been two years since at Evansville Ind, a tank containing nitrous oxide exploded, killing an anesthetist. The publicity was widespread. Last month a patient died on the operating table in Los Angeles because of the explosion of an anesthetic mixture. Exploitation by the press of such dramatic incidents is natural. Yet the hazard from an explosion of anesthetics, as Henderson¹ has pointed out, is probably less than that of fatally persistent hiccup. At present any death due to explosion receives front page publicity, while a hundred deaths from postoperative pneumonia may not include one mention. Henderson pointedly remarked that surgeons and anesthetists need far more to utilize means to prevent postoperative pneumonia than to worry over the hazard of explosions, except of course explosions due to carelessness.

In the case of the Los Angeles accident, reported elsewhere in this issue,² the patient was given nitrous oxide and oxygen, followed by ether. It has been pointed out repeatedly that a mixture of these gases is explosive, in fact, both ether and ethylene are explosive but only in the presence of oxygen or nitrous oxide. Explosions recorded heretofore appear to have been due to sparks from discharges of static electricity developed in the apparatus for administering the anesthetic. Unfortunately, the conditions that produce explosions are not fully understood. Various committees of the American Medical Association, such as the Committee on Anesthesia Accidents¹ and the Committee on Anesthesia Equipment of the Council on Physical Therapy,³ have drawn up conclusions and recommendations based on available information. Briefly stated, the recommendations of the Committee on Anesthesia Accidents were that the apparatus should be constructed wholly of metal or other material that is a good conductor of electricity so that it would be incapable of developing or

retaining highly localized electrical charges. An equally important measure against sparks or static electricity is to keep the atmosphere of the operating rooms sufficiently moist, a humidity² of 55 per cent is sufficient to prevent the development of electrical charges. In the operating room, or wherever inflammable anesthetics are used, there should be strict rules against any open flame or light. The electrical equipment of the operating room and all suction, heating, radiologic diathermy, and other apparatus should be of good construction and should be kept in such good repair that sparks cannot be produced. Particularly important is it that all electrical apparatus should be so enclosed or so protected that anesthetic gases and vapors cannot reach the electrically charged parts, nor will they be in such proximity to the patient as to induce static sparks. Even with all these precautions there will occasionally be an accident, because explosions due to this cause are largely fortuitous and occur even when obvious precautions are taken. In the Los Angeles accident it appears that the use of diathermy was blamed. The pathologist of the hospital in which the accident occurred has recommended in his letter to THE JOURNAL that physicians should be warned not to use diathermy in the presence of explosive gases. Regrettable as is any case of death from explosion of anesthetic gases, explosion is statistically the least of the hazards of anesthesia.

THE STANDARD AND THE PRESUMPTIVE KAHN REACTIONS

The Kahn reaction has become an accepted procedure for the serum diagnosis of syphilis. There was a time when it seemed that no new method could replace the Wassermann test. About five years ago the Wassermann test was replaced by the Kahn test in the laboratories of the United States Navy and of the Michigan Department of Health. Since that time the Kahn test has replaced the Wassermann in numerous other laboratories and has attained wide use throughout the world as a standard method either with or without the use of the Wassermann test. The superiority of the Kahn test over different Wassermann techniques as well as other precipitation tests is shown by an analysis of the results obtained at the competitive serologic conference of the League of Nations Health Committee held at Copenhagen in 1928.¹ At that conference seven Wassermann methods and seven precipitation tests, including the Kahn, were put to a practical trial in the examination of approximately 1,000 serums, half of which were from syphilitic patients. The Kahn test was one of a group of four methods that did not give positive reactions in the nonsyphilitic cases, and it was more sensitive than the other three to the extent of 20, 45 and 55 per cent, respectively. Among the remaining ten methods that gave varying numbers of

¹ Henderson, Vandell. The Hazard of Explosion of Anesthetics. J A M A 94 1491 (May 10) 1930.

² California News this issue page 534.

³ Williams H B. The Explosion Hazard in Anesthesia. J A M A 94 918 (March 29) 1930.

¹ Report of the Second Laboratory Conference on the Serodiagnosis of Syphilis. Geneva. League of Nations Health Organization 1928.

positive reactions in nonsyphilitic cases, one, developed by Prof. Rudolf Muller² of Vienna, exceeded the Kahn in sensitiveness by about 4 per cent. But this method, owing to its impracticability, has since been displaced by Muller in favor of a more recently developed technique.³ The Kahn reaction was thus not only free from false positive results but remarkable for its sensitiveness.

Lately, interest has been directed to the presumptive Kahn test.⁴ This test was developed by Kahn as an auxiliary method to the standard or regular Kahn test, the difference between the two methods being that the presumptive is more sensitive than the regular test. This increased sensitiveness is due to the fact that in the presumptive test "sensitized" Kahn antigen is employed, which possesses a greater degree of sensitiveness than "standard" antigen, used in the regular test. Owing to the possible danger in employing an oversensitive method for the serum diagnosis of syphilis, Kahn believed it best, until the true value of the test is determined, to consider the results presumptive in character. The main functions of the presumptive test are to serve as a technical check on the regular Kahn test and especially as a check on weak and borderline reactions given by that test. The presumptive test being more sensitive, it should give strongly positive reactions whenever the regular test gives borderline reactions. Negative reactions with the presumptive test have greater diagnostic value in eliminating the likelihood of syphilitic infection than similar reactions with the regular test. Positive reactions with the presumptive test aid in establishing a diagnosis of syphilis in isolated cases wherein the regular Kahn test is negative.

McDermott⁵ recently reported on the comparative sensitiveness of the regular and the presumptive Kahn tests based on 15,000 examinations. This worker found the presumptive test to be 26 per cent more sensitive than the regular Kahn test in treated cases of syphilis and 2.5 per cent more sensitive in routine admissions in the University of Michigan Hospital. In spinal fluid tests based on 1,358 examinations the same worker⁶ found the presumptive Kahn test to be 18 per cent more sensitive than the regular Kahn test in treated cases of neurosyphilis and 12 per cent more sensitive in routine admissions. The studies of Davenport⁷ are of especial interest in this connection. This worker found the Kahn test for spinal fluid to be free from false positive reactions but to miss an occasional case of neurosyphilis. Of 118 spinal fluid examinations on patients who presented themselves for

diagnosis, the Kahn test was negative in two cases of neurosyphilis and in three cases of questionable neurosyphilis. Of 369 spinal fluid examinations in treated cases of syphilis, 23 negative Kahn reactions were obtained on the same number of patients who required further central nervous system therapy. The conditions are reversed, however, when the results this worker obtained are compared with the presumptive spinal fluid test. Of 115 examinations on patients who presented themselves for diagnosis, the presumptive Kahn test was positive in 14 patients in various stages of syphilis who showed insufficient clinical evidence of neurosyphilis. One patient with clinical evidence of neurosyphilis, whose spinal fluid gave completely negative serologic results with the colloidal gold, mastix and globulin reactions, and with a cell count of 7, reacted negatively also with the presumptive Kahn test. Turning to treated cases of neurosyphilis, of 359 spinal fluid examinations, 30 were positive in patients in whom no further therapy directed to the central nervous system was indicated. In three patients whose spinal fluids gave negative presumptive reactions, it was deemed advisable to continue central nervous system therapy as a factor of safety; these patients were at work and appeared normal.

Evidently, therefore, the presumptive spinal fluid test is extremely sensitive in detecting changes in the central nervous system due to syphilitic infection. As Davenport points out, his study is too limited to establish that a positive presumptive test on spinal fluid is a diagnostic criterion for neurosyphilis. Meanwhile the method should serve as a stimulus to clinicians to search for evidence of neurosyphilis when the reaction is positive and should play an important part in helping to eliminate neurosyphilis when the reaction is negative.

PHYSIOLOGIC MANIFESTATIONS OF SLEEP

Many textbooks of physiology contain little or no mention of sleep. They may refer to the general manifestations of this state and attach a series of hygienic comments to their descriptions, but theories as to the genesis of sleep are for the most part cautiously avoided. Sleep therefore remains among the riddles of physiology. There are chemical theories that make sleep the result of the action of substances generated during the waking hours and having a soporific effect on the brain. Such conceptions rest on doubtful foundations and are not generally accepted. This is true likewise of the histologic or biophysical theories. These postulate¹ that in the waking state the neighboring nerve units are in contact with each other; transmission of nerve impulses from neuron to neuron is then possible and the result is consciousness. During sleep on the other hand the dendrites

¹ Halliburton W. D. and McDwall R. J. S. *Histology*. Philadelphia: P. Blakiston's Son & Co. 1927.

² Page 135 of the report.
³ Muller Rudolf. *Deutsche med. Wchnschr.* 55: 1624 (Sept. 27) 1929.

⁴ Kahn R. I. *The Kahn Test*. Baltimore: Williams and Wilkins Company, 1928, p. 141.

⁵ McDermott Elizabeth B. *The Presumptive Kahn Procedure in Syphilis Based on 15,000 Examinations*. *Arch. Path.* 5: 661 (Oct.) 1929.

⁶ McDermott Elizabeth B. *The Kahn Presumptive Procedure with Spinal Fluids*. *Arch. Neurol. & Psychiat.* 23: 551 (March) 1930.

⁷ Davenport K. M. *Am. J. Syph.* 5: 570-575 (Oct.) 1929.

are assumed to be retracted in an ameboid manner, the neurons are therefore separated, and the result is unconsciousness.

More intriguing are the so-called anemia theories of sleep.² They suggest that the alternation between sleeping and waking may be connected with a rhythmic variation in the blood supply to the cerebral cortex. Sleep, with its diminished flow of blood through the brain, is thus represented as a condition of cerebral anemia. Howell, among others, has believed that this follows dilatation of the blood vessels of the skin, such dilatation being due to vasomotor fatigue. Diminished metabolism also has been brought into the category of explanations of sleep. One writer³ argues that it need not be surprising to find that the frequency of the heart as well as that of respiration, retains during this period a value only about three fourths of normal. For the same reason, the blood pressure assumes at this time a level considerably below its usual one. These effects have been made use of repeatedly in explaining the phenomenon of sleep, it being held that the cells composing the higher centers enter this state of depressed function in consequence of a diminution in their blood supply. Thus, he adds it is believed that the volume of the brain decreases during sleep, because a portion of the blood ordinarily allotted to this organ is temporarily diverted into the portal and cutaneous circuits.

The recent careful investigations of Grollman⁴ at Johns Hopkins University seem to upset many of the current assumptions. He has observed that the decreases in cardiac output, blood pressure and oxygen consumption during sleep are of the same order of magnitude and such as would be expected to occur in complete rest. This fact, Grollman avers, renders improbable the view that sleep is attended by any marked vasomotor changes, redistribution of blood, cerebral anemia, or splanchnic congestion as held by earlier workers. It is worthy of emphasis that these experiments, like those of Hill and Pieron, refute the idea that the blood pressure is lower during sleep than when the subject is awake. That is, there is no specific change in the blood pressure that is associated with the sleeping state, but the observed values occur irrespective of whether the subject is asleep or awake, so long as he is completely at rest. Furthermore, the sleeping state is not characterized by any peculiar diminution in the metabolism as compared to the waking state at the same hour of the night. The oxygen consumption decreases rapidly in the early hours of the night to a minimum early in the morning which is about 10 per cent lower than the basal value as observed in the morning after awakening. If the cardiovascular and metabolic functions are excluded from the causation of the somnolent

state, and changes in them are merely incidents in the physiologic cycles, other causes of sleep must be discovered. This paves the way for considerations of sleep as a process of inhibition, such as Pavlov has championed.

IODIZED MILK

The current enthusiasm for child welfare, with all that it implies for prenatal care and for growth, development and maternal care, was reflected in the recent White House Conference on Child Health and Protection. The number of health items that arouse concern seems to be growing with the years. Child psychology has of late required an enormous impetus. In the domain of bodily health, preventive medicine is forging ahead rapidly. There are "well baby clinics" that vie with "sick baby clinics." Vaccination against smallpox and immunization against diphtheria are becoming routine measures in well managed communities. Dental hygiene has placed specialists at the call of the schools. To these features may be added a widespread concern about the proper development of the thyroid gland and the attempts to avert adolescent goiter. The extensive occurrence of such thyroid abnormality in this country has become familiar. Details have repeatedly been rehearsed in THE JOURNAL.

The goiter regions of the United States are characterized as a rule by a smaller content of iodine in the vegetation and local edible foods. Analyses of drinking water obtained from nongoitrous regions show higher iodine values than those obtained from regions where goiter is prevalent.¹ The association of endemic goiter with a lack of iodine was reported in 1921 by Marine and Kimball.² As is now well known, the commonest prophylactic measures have involved the periodic administration of therapeutic doses of iodide or other iodine-bearing compounds to school children. Other measures have consisted in the addition of inorganic iodides to the drinking water supply and to table salt.

It is now an established fact, as Krauss and Monroe³ have recently remarked, that the iodine content of milk can be materially increased by feeding cows some source of inorganic iodine, such as potassium iodide, or some source of organic iodine, such as kelp. Considerable milk containing more than a normal amount of iodine is probably being produced through the feeding of iodized mineral mixtures and commercial preparations made up of substances that contain iodine. It is also well known that the iodine content of milk may vary from a trace to several parts per million, depending on regional influences. Supplee⁴ has made analytic

² Howell, W. H. *Textbook of Physiology*. Philadelphia: W. B. Saunders Company, 1927.

³ Burton Opitz, Russell. *An Elementary Manual of Physiology*. Philadelphia: W. B. Saunders Company, 1922.

⁴ Grollman, A. Physiological variations in the Cardiac Output of Man. I. The Pulse Rate, Blood Pressure, Oxygen Consumption, Arteriovenous Oxygen Difference and Cardiac Output of Man During Normal Nocturnal Sleep. *Am. J. Physiol.* 95: 274 (Nov.) 1930.

¹ McClendon, J. F. Inverse Relation Between Iodine in Food and Drink and Goiter: Simple and Exophthalmic. *J. A. M. A.* 82: 1669 (May 24) 1924.

² Marine, David and Kimball, O. P. The Prevention of Simple Goiter in Man. *J. A. M. A.* 77: 1068 (Oct. 1) 1921.

³ Krauss, W. E. and Monroe, C. F. A Comparison of the Influence of Iodized Milk and of Potassium Iodide Administered Directly on the Size and Iodine Content of the Thyroid Gland of Rats. *J. Biol. Chem.* 89: 581 (Dec.) 1930.

⁴ Supplee, G. C. Seasonal Variations in Certain Inorganic Constituents of Dry Milk Produced in New York and Wisconsin. *J. Dairy Sci.* 13: 522 (Nov.) 1930.

comparisons of the iodine content of representative dry milk powders prepared every month of the year from milks produced in Wisconsin and New York, respectively. The outcome was perhaps somewhat unexpected. The powder from the New York territory, summer production, contained 145 parts of iodine per billion, the winter production from the same territory contained 67 parts per billion. The powder from the Wisconsin territory, summer production, contained 704 parts of iodine per billion, the winter production from the same territory contained 961 parts per billion.

The experimental studies of Kruss and Monroe at the Ohio Agricultural Experiment Station in Wooster leave little doubt that "naturally iodized" milk can exert an influence in goiter prophylaxis. In tests on susceptible animals, iodized milk, secured by feeding 0.1 Gm of potassium iodide daily to cows, was compared with normal milk and with normal milk plus different amounts of potassium iodide. Prophylactic and curative methods were employed. In general, smaller thyroid glands containing a greater percentage of iodine resulted whenever iodized milk or potassium iodide was fed than when "normal" milk of the region was used.

The Ohio biochemists remark that iodizing the general milk supply would insure a constant source of iodine to all persons using milk. It would automatically treat a great many individuals who either through ignorance or lack of funds have had no knowledge of a thyroid deficiency. It would serve as a prophylactic, particularly in young growing children, when an iodine deficiency has not manifested itself in any symptom ordinarily used in diagnosis. Furthermore, the iodine would be furnished in a stable, convenient and pleasant form. On the other hand, they add, in cases in which a constant supply of iodine would be irritating rather than beneficial, some source of ordinary or noniodized milk would need to be available. It is true that putting iodine into milk through the cow is rather wasteful, as only from 10 to 15 per cent of the iodine fed appears in the milk, but by such a procedure the cow also is benefited. Recent studies by Hanzlik and his associates⁵ and of Mendel and Vickery⁶ make it seem unlikely that normal growth will be interfered with by the continued administration of iodide in small daily doses. Nevertheless there is a widespread belief that adolescents as well as adults should not be subjected indiscriminately to a surplus of iodine in all sorts of ingested foods, condiments and drink. Goiter prophylaxis ought to be placed on a quantitative dosage basis. Milk doubtless can be made useful in such endeavors as can other food products. The mode of preference should be left to the physician, however, and not to the food propagandist.

⁵ Hanzlik, P. T., Talbot, E. P. and Gibson, E. E. Continued Administration of Iodide and Other Salt. *Arch. In. Med.* 42: 579 (Oct.) 1928.

⁶ Mendel, I. B. and Vickery, H. B. Effect of Continued Administration of Iodine on the Growth of the Albino Rat. *Proc. Soc. Exper. Biol. & Med.* 27: 500 (May) 1929.

Current Comment

HOUSE COMMITTEE REPORTS ON FEDERAL AID FOR MATERNAL HYGIENE

The Committee on Interstate and Foreign Commerce of the House of Representatives has recommended that the bill passed by the Senate (S 255) to authorize federal subsidies for the promotion of intrastate activities in the fields of maternal and infant hygiene, under the supervision and control of the federal government, be amended to provide federal subsidies for the promotion of intrastate rural hygiene also, under similar supervision and control, and be then enacted. The bill as thus amended has the endorsement of the Secretary of the Interior and of the Secretary of Labor, and the qualified endorsement of the Secretary of the Treasury. It is commonly understood to have the tacit endorsement of the President. The report of the committee, however, does not contain evidence to show that former legislation of this type in the field of maternal and infant hygiene accelerated the decline of infant and maternal death rates, after seven years' effort and eleven million dollars' expense. The report does not provide evidence to show that there is greater need for federal aid in the promotion of health in rural areas, which it is proposed to benefit by this bill, than in urban areas, which the bill ignores. Probably the committee found no such evidence. In view of the strong disapproval by the administration of federal financial aid, even temporarily, to the people of certain states now in dire distress, it is difficult to comprehend the reasoning by which the administration approves continuing permanent federal aid of the character proposed by this bill. *THE JOURNAL* must continue to protest against the subordination of the constitutional rights of the states to federal control and the promotion of the growth of the federal bureaucracy.

STATISTICS ON CANCER

The British government, about ten years ago, had a quantity of radium available, which was entrusted to the Medical Research Council of England to be used in the treatment of cancer. The council lent this radium to institutions located at centers of population where a general hospital and a university medical school worked in conjunction with the investigators of radium. The council has recently published a report¹ of the results obtained from eleven such institutions. It shows that only a small number of cases of carcinoma were treated during the first five years of the survey. Recently the number of patients treated has increased considerably. It is too soon, however, to draw any conclusions as to the final results. The report brings out one promising feature in the treatment of cancer. Radium was used in the treatment of carcinomas of the breast in a relatively small series. In a fifth of the cases, pronounced inoperable by surgeons, the patients were alive without apparent signs of disease two or three years after treatment. Somewhat similar results were

¹ Medical Uses of Radium. Special Report Series, number 14. Medical Research Council, London, 1933.

reported with inoperable carcinoma of the cervix, although none of the patients treated more than five years previously were alive. This would indicate that physicians may consider treatment by radium or x-rays of any inoperable case, no matter how hopeless the possibilities may seem. In a few years England will have excellent statistics on the treatment of cancer by radium. A national organization might undertake and enlarge on a similar plan in this country. Such control is needed especially because lenders of radium for commercial purposes now urge its use in unsuitable cases by men not specially trained in its application. There is apparently no correlation of results of treatment of cancer by radium in the various parts of our country. Physicians must rely on reports in the literature, which are frequently contradictory. A yearly national report should be made, as is done in England. It could be enlarged to include the final results of all cases of cancer, whether treated by radium, x-rays or surgery. If all the medical centers were included in this survey, it would be only a few years until some impartial figures of considerable proportions would be available indicating the prognosis and the best treatment for the various types of cancer.

Association News

CONTRIBUTIONS FOR MEDICAL SALON IN PERSHING HALL

The sum contributed this week for the Pershing memorial in Paris brings the total to \$1,544.60. The list of those who have contributed during the current week follows:

James S. Brummette, M.D., Major M. C., U. S. Army, Nogales, Ariz.	Hyman Miller, M.D., Los Angeles
Samuel K. Levy, M.D., Brooklyn, Calif.	Lim P. Richter, M.D., Saginaw, Mich.
Imil C. Blach, M.D., San Diego, Calif.	Joseph F. Morse, M.D., New York
Thomas J. Vischer, M.D., Philadel- phia	J. F. Buzzard, M.D., Altoona, Pa.
B. I. Saylor, M.D., Redding, Calif.	F. P. Quinn, M.D., Bismarck, N. D.
Michael A. Desmond, M.D., Santa Monica, Calif.	R. H. Meade, Jr., M.D., Philadel- phia
C. H. Sherman, M.D., Detroit	Edward J. Agnelli, M.D., Detroit
Frank C. Robinson, M.D., Walla- Walla, Wash.	Bulle Thomas, M.D., New York
Harry H. Robinson, M.D., Spo- kane, Wash.	George H. Caldwell, M.D., Kala- mazoo, Mich.
Kathleen Leuton, M.D., Portland, Ore.	Circenshaw Mandel, M.D., Cuerna- vaca, Morelos, Mexico
John Joseph Gailey, M.D., Water- bury, Conn.	W. T. Burleigh, M.D., Pittsburgh
Francis J. Burnett, M.D., Boston	Dodge County (Nebraska) Medical Society
C. G. Toland, M.D., Los Angeles	Oklahoma County Medical Associa- tion, Oklahoma
Charles C. Ross, M.D., Houston, Texas	Gratiot-Isabella Chire County Med- ical Society, Mich.
Paul D. White, M.D., Boston	C. C. Mechling, M.D., Pittsburgh
George Tully, Vaughan, M.D., Washington, D. C.	C. A. Stone, M.D., St. Louis
	Harold S. Hulbert, M.D., Chicago
	C. A. Miller, M.D., Chicago
	Ellen A. Stone, M.D., Providence, R. I.

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts at 10 a. m. on Monday, 10:45 on Tuesday, 10:45 on Thursday and 10 o'clock on Saturday, over Station WBBM (770 kilocycles or 389.4 meters).

The program for the week is as follows:

February 16	Another It's—Sinusitis
February 17	Worn Out Filters
February 19	Your Child's Eyes
February 21	It May Be Your Teeth

Five Minute Health Talks may be heard over the Columbia Broadcasting System daily except Sundays and Holidays from 12 to 12:05 p. m.

The program for the week is as follows:

February 16	The First Week
February 17	Sinits
February 18	Too Much Coddling
February 19	Why People Get Sick
February 20	The Art of Accepting Affliction
February 21	Food Habits for Children

Medical News

(PHYSICIANS WILL CONFER A FAVOR TO SECURE FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARIZONA

Bill Introduced—S. 37 proposes to require all applicants for licenses to practice any form of the healing art to pass examinations in anatomy, physiology, chemistry, bacteriology, pathology and hygiene, given by a board of examiners in the basic sciences prior to being permitted to present themselves for examination before their respective professional or cult licensing boards.

CALIFORNIA

Bills Introduced—A. 1501 proposes to amend the definition of the practice of dentistry so as to prohibit a licensed physician from practicing oral surgery. A. 1502 proposes to amend the procedure to be followed in revoking or suspending licenses to practice dentistry. A. 1503 proposes to designate the following practices 'unprofessional conduct and as such sufficient cause for the revocation of licenses to practice dentistry: (1) aiding or abetting any unlicensed individual to practice dentistry unlawfully and (2) practicing or advertising under a false, assumed or fictitious name either as an individual firm or corporation. A. 1504 proposes to make it a misdemeanor for any person to practice, or to advertise or in any other manner indicate that he is practicing or will practice dentistry, under a false, assumed or fictitious name.

Report of Tropical Disease Clinic—The Institute of Tropical Medicine of the University of California, San Francisco, gave 445 treatments to eighty-three patients in its first year of service. According to Dr. Alfred C. Reed, director, in a report for the period from Sept. 1, 1929, to Sept. 1, 1930, thirty Americans, eighteen Filipinos, nine Mexicans, eight South Americans and Central Americans and eighteen others of miscellaneous nationalities received an average of more than five treatments each. Among the diseases found were leprosy, pellagra, granuloma inguinale, elephantiasis, dysenteries, intestinal parasites and malaria. The number of patients referred to the University Hospital has increased each month since the establishment of the institute it is said, and, in some cases, patients are referred back to their physicians with full reports and recommendations for treatment. Patients able to pay a fee are referred to physicians who specialize in this kind of work but the institute cares for indigent patients. Out of town patients must be prepared to pay for lodging outside the hospital as the clinic has no facilities for patients who are not confined to bed.

Death from Explosion of Mixture of Anesthetic Gases—In a laparotomy in a Los Angeles hospital, a woman aged 43, was given nitrous oxide and oxygen. After incision was made in the abdominal wall, because the depth of the anesthesia was not sufficient, ether was added to the mixture. A few moments later an explosion occurred. A request for information by THE JOURNAL elicited the fact that the explosion was confined apparently to the mixed gases in the anesthetic mask and in the lungs. Immediately after the explosion the patient stopped breathing and could not be resuscitated. The explosion lifted the mask about an inch or more from the face. There was a slightly charred or burned area on the chin. At necropsy, innumerable variously sized hemorrhagic areas due to rupture of alveoli and bronchioles were found in the lungs, also four small holes about one-fourth inch in diameter were found passing through the visceral pleura on the inner border of the left lung. While the cause of the explosion is not definite, it appears that diathermy was applied during the operation. As all other sources of sparks had been eliminated, according to the report sent to THE JOURNAL it would seem that the elec-

trostatic field, developed in and on the patient by these high frequency currents, may have been the primary cause. A tiny spark probably jumped from some individual near the patient or from shifting or slightly raising the mask, thus igniting the explosive mixture of gases.

COLORADO

Bill Introduced—H 266 proposes to amend the state prohibition law to conform with the Volstead Act with respect to the amount and frequency of a physician's prescribing of liquor.

Society News—Dr Tom R Knowles, Colorado Springs, was elected president of the Arkansas Valley Medical Association, January 10, succeeding Dr Lanning E Likes of Lamar. Among the speakers on the program were Drs Alfred H Washburn, Denver, and Lewis J Moorman, Oklahoma City, whose subjects were "Prevention of Heart Disorders in Early Life" and "Simultaneous Bilateral Collapse in Treatment of Tuberculosis," respectively. Dr Burton B Grover addressed the El Paso County Medical Society, Colorado Springs, February 11, on "Electrosurgery", Dr Arthur J Markley, Denver, presented a report of the International Dermatological Congress in Copenhagen.

CONNECTICUT

Bill Introduced—H 111 proposes (1) to repeal that provision of the medical practice act which exempts applicants who graduated from medical colleges prior to Jan 1, 1919 or who were eligible to examination before that date, from the requirement of having had prior to beginning the study of medicine, nine months work in chemistry, physics and general biology, and (2) to eliminate the fee of \$15 for approving the credentials of an applicant for a license by reciprocity.

ILLINOIS

Society News—Dr Ralph C Hamill, Chicago, addressed the Champaign County Medical Society, February 12, on prevention of nervous disorders. Dr Julius H Hess, Chicago, will address the Rock Island County Medical Society, February 15 on "Focal Infections of Childhood". Dr James H Hutton, Chicago, addressed the Vermilion County Medical Society, Danville, February 3, on "Endocrine Disorders Occurring in General Medicine," and the DeWitt County Medical Society, Clinton, February 11, on "Diagnosis and Treatment of Common Endocrine Disorders."

Chicago

Institute for Hospital Boards—An institute for lay boards of hospitals and public health nursing organizations will be held in Chicago February 17, under the auspices of the Central Council for Nursing Education concurrently with the annual congress on medical education, licensure and hospitals. Among the speakers will be Carl E Buck, DPH, Detroit, on "Responsibility of the Citizen for Community Health", Dr Henry S Houghton, Iowa City, The State University and Nursing Education, Miss Isabel Stewart, of Columbia University, New York, on 'The Present Trend in Nursing Education' and Miss Adda Eldredge, Madison Wis, Relation of the School of Nursing to the Board of Directors. At a dinner given jointly with the Council on Medical Education and Hospitals of the American Medical Association Monday evening February 16, Dr Henry A Christian, Boston, will speak on "The Clinic as a Center of Graduate Study."

Society News—Dr Vilrav P Blair, St Louis will deliver the seventh Lewis Linn McArthur lecture of the Billings Foundation of the Institute of Medicine of Chicago before the institute and the Chicago Surgical Society February 27 on "Facial Abnormalities Fancied and Real the Reaction of the Patient, and Their Attempted Correction". Dr George Milles, among others, addressed the Chicago Pathological Society, February 9 on "Primary Carcinoma of the Jejunum". A McCrea, PhD, Detroit addressed the Chicago Council of Medical Women February 6 on "Parasitic Fungi of the Skin," and Rosalie M Parr, PhD, "Effects of Germanium and Selenium Compounds on Blood Morphology". The Society of Medical History of Chicago will be addressed February 20 at the Archibald Church Library, Northwestern University, 303 East Chicago Avenue by Dr M Herbert Barker on "Richard Bright and His Contribution to Renal Pathology", J Barry Anson, PhD, Thomas Willis and His Contribution to Anatomy, and Dr Irving S Cutter, "A Brief Description of Some Source Items in the Church Library". The annual conference of the Chicago Association for Child Study and

Parent Education will be held at the Palmer House, March 28. The tentative program includes papers by Dr Lawson G Lowrey, director, Institute for Child Guidance, New York, on "Some Emotional Difficulties in Marital Adjustment Related to Early Parental Patterns", Dr Bernard Glueck, New York, "Some of the Sources of Marital Discontent", Phyllis Blanchard, PhD, of the Philadelphia Child Guidance Clinic, "Personality Problems in Marriage and Parenthood," and Floyd Dell, author, "The Family and the Machine Age". In a symposium on urinary lesions held by the Chicago Roentgen Society, February 11, speakers were Drs Bernard H Nichols, Cleveland, on iopax, Herman L Kretschmer, pyelography and Ursus V Portmann, Cleveland "Irradiation Treatment of Malignant Urinary Lesions". Dr Bowman C Crowell presented a paper on differential diagnosis of giant cell tumor before the Chicago Orthopedic Club February 13. Dr Clark W Finnerud, among others, will address the Chicago Ophthalmological Society, February 16, on "Skin Diseases of the Eyelids". Dr William L Beecher will speak on "Hyperesthetic Rhinitis and Asthma Due to Digestive Ferments" before the Chicago Society of Allergy, February 16. A symposium on sterility will be conducted before a joint meeting of the Chicago Gynecological and Urological societies, February 26. Dr Rudolf Schonheimer, director, Biochemical Laboratory of the Pathological Institute, University of Freiburg, Germany, addressed the Medical Research Club of the University of Illinois, January 28 on "Recent Advances in Our Knowledge of Cholesterol Metabolism."

INDIANA

Bills Introduced—S 96 proposes to require the annual registration of registered nurses and trained attendants and the payment of an annual fee of \$1 and of 50 cents, respectively. H 32 proposes to grant financial aid to any county, or to any two or more counties which may hereafter establish and maintain a hospital for the care and treatment of persons suffering from tuberculosis, or to any county which does not maintain such hospital but which contracts with another county for the care and treatment of such persons. H 246 proposes to provide that in every city of 3,000 or more population the board of health make medical inspections from time to time of all persons attending or employed in public, private and parochial schools. H 304 proposes to authorize a court or jury to order the sexual sterilization of any person convicted of murder, burglary, robbery, banditry, arson, rape or the commission of any other felony in which life is threatened.

IOWA

Bills Introduced—S 56 proposes to amend the law with respect to coroners by allowing a coroner, if he is a licensed physician to perform autopsies. H 31 proposes to define podiatrists as persons who publically profess to be podiatrists or who publically profess to assume the duties incident to the practice of podiatry or who publically profess to treat ailments of the human foot persons who diagnose or give medical or surgical treatment to ailments of the human foot.

Society News—Among speakers at the meeting of the Sioux Valley Medical Society, Sioux City, January 20-21 were Drs Raphael Isaacs, Ann Arbor, Mich, on "Different Types of Anemia: Diagnosis and Treatment", Sumner L Koch, Chicago, "Acquired Contractures of the Hand", William W Duke, Kansas City, allergy, W McKim Marriott, St Louis, care and feeding of infants and children, Edward C Roscnow, Rochester, Minn, focal infection, Frederick A Willis, Rochester, Minn, treatment of heart failure, Frederic F B Foley, Minneapolis, surgical treatment of hydronephrosis and Ralph M Waters, Madison Wis, oxygen and carbon dioxide variations accompanying the relief of pain.

KANSAS

Bills Introduced—H 26 to amend that section of the workmen's compensation act stating the amount for which an employer will be liable for medical attention rendered an injured employee, proposes that such liability shall extend to such medical surgical or other attendance or treatment nursing, or hospital service, medicine crutches and apparatus as may be necessary during sixty days after the injury or for such time as the industrial commission may order. An employee or another in his behalf may obtain emergency treatment at the expense of the employer. H 267 proposes that the provisions of the narcotic act shall not apply to decocted or infused or preparations made therefrom or to other preparations of coca leaves which do not contain cocaine.

Society News—The Allen County Medical Society devoted a recent meeting to a discussion of poliomyelitis, among the speakers were Drs. Rexford L. Dwyer and Frank C. Neff, Kansas City, and Clarence H. Kimmman of the state board of health, Topeka.—Dr. Arthur L. Strauss, St. Louis, addressed the annual meeting of the Shawnee County Medical Society, Dec. 1, 1930, on myocarditis.—The Kansas City Southwest Clinical Society held its monthly clinic, January 13, at Research Hospital. Dr. William I. Coughlin, St. Louis, spoke on "Diagnosis and Treatment of the Acute Abdomen," he also addressed a joint meeting of the Jackson and Wymondotte county medical societies on sympathectomy in arthritis.—Plans for a year's investigation in high blood pressure have been announced by the University of Kansas School of Medicine. Dr. John B. Nimmer, will carry on the research which is financed partly by a grant of \$1000 from the National Research Council.—Drs. Earl C. Padgett and Leroy A. Calkins addressed the Wymondotte County Medical Society, January 6, on "Relative Position of Kidney and Surgery in Cancer of the Face, Mouth and Jaws" and "Use of Radium in Gynecology," respectively. The society was addressed February 3, by Drs. Fred I. Angle, Kansas City, and Joseph E. Weller, Kansas City, Mo., on "Treatment of Acute Cardiac Embarrassment Without Edema" and "Treatment of the Cardiac Patient with Edema," respectively.—Dr. George C. Lee, Kansas City, Mo., addressed the Bourbon County Medical Society, Dec. 15, 1930, on "Disorders of the Heart."—Dr. Carl F. Nelson, Lawrence, addressed the Sumner County Medical Society, Dec. 18, 1930, on "Causes, Effects and Treatment of Acute and Chronic Oxygen Want" and Dr. Ira H. Dillon, Wellington, "Conservatism in the Treatment of Nasal Accessory Sinus Infections."

MAINE

Bill Introduced—S. 153 proposes to permit cities and towns to appropriate money to be expended in the city or town where appropriated, under the direction of the state department of health, for dental hygienist service.

MARYLAND

Professors Welch and Howell to Retire—Dr. William H. Welch, professor of the history of medicine, and Dr. William H. Howell, professor of physiology and director of the School of Hygiene and Public Health, Johns Hopkins University, will retire in June. Dr. Welch, who will be 81 in April, was the first professor of pathology at Johns Hopkins University School of Medicine, having served in that capacity from 1884 until 1916 when he became the first director of the School of Hygiene and Public Health. In 1926 he resigned that position to accept the newly created chair of the history of medicine. The new medical library at Johns Hopkins dedicated in 1929 is named for him. Dr. Welch's eightieth birthday was marked by an international celebration. Dr. Howell, who will be 71 this month, has been professor of physiology since 1893. In 1926 he succeeded Dr. Welch as director of the School of Public Health and Hygiene. He is the author of a textbook on physiology and was president of the International Physiological Congress in 1929 when it met in Boston. Dr. Welch was the guest of honor at a dinner at the Maryland Club, Baltimore, January 28, at which Dr. Howell presented to him a volume bearing congratulatory messages from friends. John D. Rockefeller, Jr., also presented a volume recounting the eightieth birthday celebration.

MASSACHUSETTS

Bills Introduced—S. 222 proposes to regulate the practices of hair dressers, cosmetologists and electrologists. A cosmetologist would be permitted to remove superfluous hair, warts and moles from the body of any female by the use of electricity, or otherwise, and an electrologist would be permitted to remove superfluous hair, warts or moles from the body of any person by use of electricity. H. 265 proposes to extend the provisions of the vaccination law to private schools.

District Society Celebrates Ninetieth Anniversary—The Essex North District Medical Society celebrated the ninetyeth anniversary of its founding at a meeting, January 7, at the Groveland Congregational Church where the first meetings were held in 1841. Dr. Frank W. Snow, Newburyport, outlined the history of medicine in the district and the formation of the society. In eighty-seven years there have been only four secretaries of the society. Drs. Francis W. Anthony, Haverhill, and I. Forrest Burnham, Lawrence, read other historical papers. Miss Helen King Spofford, granddaughter of Dr. Jere-

miah Spofford, one of the founders, exhibited for the society a collection of her grandfather's old medical instruments, books and documents. Other unique articles were shown, including a string of sleigh bells tuned so that citizens might recognize the doctor's approach.

MINNESOTA

Bills Introduced—H. 300 proposes to regulate the practice of naturopathy. A proposed board of naturopathic examiners would be authorized to issue certificates to all present naturopathic practitioners, which would entitle the holders to certificates of registration in the basic sciences without examination. Thereafter all naturopathic applicants, however, would be examined in the basic sciences. Naturopathy is said to be "non-medical and drugless and is defined as the science and art of nature cure, or of naturopathy, its science being the use of such natural, corrective, vital and purifying therapeutic agencies as will enable the human organism to free itself of abnormal and toxic conditions and to set up such inherent healing processes as will restore and maintain the highest possible degree of health, that such restorative methods include all physical means and instrumentation applicable in the scientific uses of sunlight, air, water, earth, food, the non-narcotic vegetable herbs and the magnetic, electric and etheric energies that have therapeutic relation to the biological laws and processes of life." H. 301 to amend the basic science act, proposes to designate specifically the practice of naturopathy as a branch of the healing art to which the basic science act applies and to add one doctor of naturopathy to the board of examiners in the basic sciences.

MISSOURI

Society News—Dr. Emmett P. North was elected president of the Missouri Pacific Hospital Association, January 31. Dr. James R. McLean, Kansas City, vice president, and Dr. Henry J. Schenck, St. Louis, secretary.—Dr. Geza de Lukits, Chicago, addressed the Jackson County Medical Society, February 10, on "Surgery in Diabetic Patients" and Dr. Clay S. Merriman, Kansas City, "Cause and Treatment of Diabetes."

Bills Introduced—S. 44 proposes to repeal the state prohibition law. H. 220 proposes that any bail or trust company may engage in the practice of medicine, surgery, dentistry or chiropractic without examination and without securing any license to practice, to the same extent and in the same manner that banks and trust companies may now practice law. H. 223 proposes to authorize the mayor and board of aldermen of cities of the fourth class, among other things, to regulate and license and to levy and collect a license tax on, druggists and the owners or managers of private venereal hospitals.

NEBRASKA

Bill Introduced—H. 309 proposes to authorize trial judges when in the trial of a cause the mental state of the defendant at the time of the commission of the offense is at issue, to appoint one or more but not to exceed three, expert witnesses. The state and the defendant, however, shall have the right to call their own expert witnesses.

License Revoked—According to the department of public welfare, the license of Dr. George L. Wagner, Deshler, to practice medicine in Nebraska was revoked, Nov. 19, 1930, following his failure to obey the order contained in a suspended sentence of the department of public welfare, Oct. 31, 1930, that he submit himself to an institution and take the alcoholic cure.

NEW JERSEY

Bill Introduced—A. 101 to amend the workmen's compensation act, proposes to designate as "radium poisoning" that occupational disease now listed as "radium necrosis."

Society News—Drs. Arthur J. Casselman and Hyman I. Goldstein, among others, addressed the Camden County Medical Society, February 3, at Camden, on "Loss of Sugar Tolerance in a Diabetic" and "Streptococcus Faecalis with Erythema Nodosum and Erythema Multiforme Exudativum."—Dr. Clay Ray Murray, New York, addressed the Atlantic County Medical Society, February 13, on treatment of fractures.

NEW MEXICO

Bills Introduced—S. 21 and H. 40 propose to create a board of barber examiners and to regulate the practice of barbering. H. 40 has passed the House. H. 32 proposes to create a board of naturopathic examiners and to regulate the practice of naturopathy. Such a practitioner may "diagnose

and treat diseases, injuries, deformities, or other physical or mental conditions, including the practice of obstetrics, by the use of any or all methods, such as palpating, diagnosing, and treating diseases, injuries, and defects of human beings by all known means of naturopathy, including among other things all natural agencies imbued with the healing art such as food, water, heat, cold electricity, vacuum cupping, mechanical appliances, and heliotherapy, provided however that nothing in this act shall be construed to permit the use of major surgery, serums and vaccines, and narcotic drugs."

NEW YORK

Old Age Security Plan Goes Into Effect—The New York State Old Age Security Plan became effective, January 1. This is based on a contributory system, it is reported, which means that every person in the state, whatever his circumstances, will contribute to the cost of this new plan for the relief of the aged, either in the form of a direct tax for purposes of the state government which will include this item or in the form of an increased cost of living by which direct taxation is filtered through the entire community.

Bills Introduced—H 432 proposes to modify the limitations placed by law on the practice of physiotherapy by technicians by allowing such technicians to use, in the treatment of diseases without the supervision of a licensed physician, actinotherapy, hydrotherapy, mechanotherapy, thermotherapy, and electrotherapy exclusive of the x-ray. S 345 and A 441 propose to provide that whenever a defendant's insanity or mental condition at the time of the commission of an offense becomes the issue in any criminal cause the court may appoint one or more but not exceeding three disinterested legally certified psychiatrists to examine the defendant. The appointment of such experts by the court shall not preclude the state or the defendant from calling additional expert witnesses. A 369 proposes to create a board of barber examiners and to regulate the practice of barbering.

New York City

Fifth Harvey Lecture—Edward M. East, LL.D., Harvard University, Cambridge, will deliver the fifth Harvey Society Lecture at the New York Academy of Medicine, February 19, on "Possible Immunologic Reactions with Plants."

Dr. Levene Receives Gibbs Medal—Dr. Phoebus A. Levene of the Rockefeller Institute has been awarded the Willard Gibbs Medal by the Chicago section of the American Chemical Society. This is said to be the highest chemical award in the United States and is the third time in twenty awards that a biochemist has been the recipient. Dr. Levene received the award for his work in the application of organic chemistry to biologic problems. His research in nucleic acids, amino sugars and lecithins is particularly mentioned. Dr. Levene has been assistant in chemistry since 1905 and member, since 1907, of the Rockefeller Institute. He also has an M.D. degree from the Imperial Military Medical Academy, St. Petersburg (1891). The award will be made in May.

Seminar in Physical Therapy—The New York Physical Therapy Society is sponsoring a seminar in physical therapy which will consist of didactic lectures and clinical demonstrations. The program opened February 4 with "Clinical Uses of Ultraviolet Radiation" by Dr. Edgar Mayer, Syracuse, N. Y. Edward E. Free, Ph.D., New York, spoke February 11, on "Physics of Ultraviolet Radiation" and will speak February 18 on "Physics of Photo and Heat Therapy." The following lectures will be given in Beth Israel Hospital, February 25: "George H. Vaughan, Ph.D., Cornell University, Ithaca, 'Physiology of Ultraviolet Radiation'"; and Dr. George M. MacKee, New York Post Graduate Medical School and Hospital, "Effect of Ultraviolet in Cutaneous Conditions." March 4, Dr. Ralph Pemberton, Graduate School of Medicine of the University of Pennsylvania, Philadelphia, "Massage." March 11, Harold J. Holmquist, B.S., Chicago, "Physics of Medical Electricity." March 18, Dr. William D. McKeefe, Boston, "Electrostatic Therapy." March 25, Dr. Frank H. Krusen, Temple University School of Medicine, Philadelphia, "Low Voltage Currents." April 1, Dr. Chas. Ray Murray, Columbia University College of Physicians and Surgeons, "Physical Therapy in Fractures." April 8, Dr. Harry Eaton Stewart, New Haven School of Physical Therapy, New Haven, Conn., "Medical Diathermy." April 15, Dr. William F. Schmidt, Philadelphia, "Surgical Diathermy." April 22, Dr. Josef B. Nixlin, Philadelphia, "Hydrotherapy." April 29, Dr. Francis G. Harrison, Graduate School of Medicine, University of Pennsylvania, Philadelphia, "Physical Therapy in Urology," May 6,

Dr. Francis Carter Wood, "Indications and Contraindications of X-Ray Radiation," and Dr. George M. MacKee, "Treatment of Cutaneous Cancer and Precancerous Lesions," May 13, Dr. Walter I. Galland, New York, "Physical Therapy in Orthopedics," May 20, Dr. Grant E. Ward, Baltimore, "Physical Therapy in Gynecology," May 27, Dr. Royal Storr Haynes, New York, "Posture as a Therapeutic Procedure," and Dr. Kristian G. Hansson, New York, "Posture and Exercise in Adults."

Society News—Dr. Priscilla White, Boston, among others addressed the Women's Medical Association of New York City, January 14, on "Care of the Diabetic Child."—Dr. William Wayne Babcock, Philadelphia, among others, addressed the Medical Society of the County of Kings, January 20, on "Practical Application of Spinal Anesthesia."—Dr. George Brehr spoke on "Diagnosis of Visceral Manifestations of Syphilis" before the Brooklyn Society of Internal Medicine, January 23.—Dr. David Ayman, Boston, addressed the Medical Society of Bay Ridge, Brooklyn, January 13, on "Early Diagnosis and Early Treatment of Essential (Arterio) Hypertension."—Drs. George W. Crile, Cleveland, Dean Lewis, Baltimore, and William F. Rienhoff, Jr., Baltimore, took part in a symposium on thyroid disease presented by the Medical Society of the County of New York, January 26. Dr. Charles Gordon Heyd, newly elected president, delivered his inaugural address on "Economic Contribution of Physicians to the Community."—Dr. Russell S. Ferguson addressed the Medical Association of the Greater City of New York, January 19, on "Treatment of Cancer of the Prostate by Radiation," and Dr. George F. Cahill on renal tuberculosis. Dr. Le Grand Kerr was elected president.—The ninth afternoon lecture for practitioners in the series sponsored by the New York Academy of Medicine was given January 23, by Dr. Joseph F. McCarthy on "Roentgenographic Delineation of the Urogenital Tract." Dr. Edward P. Carter, Baltimore, delivered the tenth lecture, January 30, on "Certain Aspects of Syphilitic Cardiac Disease," and Dr. Dorn Lewis, Baltimore, the eleventh, February 6, on osteomyelitis.—Speakers at the Yorkville Medical Society in the City of New York, January 19, were Drs. Abraham Hyman, on "Urological Diseases in Childhood," and Dr. Abraham A. Brill, on "Psychoanalysis in Relation to Functional Genito-Urinary Disorders."—Drs. George W. Holmes, Boston, and Kenneth R. McAlpin addressed the New York Roentgen Society, January 19, on "Problems in Diagnosis and Treatment of Lymphoblastoma" and "Radiotherapy in Lymphoma," respectively.—Dr. Frank M. Frankfeldt, among others, addressed the Bronx County Medical Society, January 21, on "Some Common Rectal Disorders: Newer Considerations and Treatment."—Dr. William F. Cunningham addressed the New York Surgical Society, January 28, on "Partial and Subtotal Gastric Excision."—Dr. Robert T. Frank presented a paper on "Endocrine Diseases: Their Diagnosis and Therapy," before the New York Academy of Medicine, February 5.—Dr. Thomas J. Harris was elected president of the New York Physicians Mutual Aid Association recently, and Dr. Alfred C. Prentice, secretary. The association is in its sixty-third year.

NORTH CAROLINA

Name Duke Hospital Wards—Fourteen wards in the new Duke Hospital, Durham, were named after men prominent in medical history. Medical wards were named for Drs. William H. Welch of Baltimore, Sir William Osler, John Clark Nott of South Carolina, Daniel Drake of Kentucky, and Walter Reed of Virginia, surgical wards, William S. Halsted of Maryland, Edmund C. F. Strudwick of North Carolina, Crawford W. Long of Georgia, Ephraim McDowell of Kentucky, and James L. Cabell of Virginia, obstetric wards, J. Marion Sims of South Carolina, Francis Prevost of Louisiana, and Henry F. Campbell of Georgia, pediatric ward, John Howard of Maryland.

NORTH DAKOTA

Bill Introduced—S 79 to amend the pharmacy practice act with respect to the substances which may be sold by general dealers proposes to allow general dealers to sell proprietary medicines in original packages and such simple household remedies as may from time to time be approved for such sale by the state board of pharmacy.

Meningitis at State Training School—In an account of the occurrence of cerebrospinal meningitis in the state training school at Mandan in THE JOURNAL, January 31, page 5, it was erroneously stated that sixty-nine cases had occurred.

the school. The sixty-nine cases is approximately the number that occurred in the entire state during 1930. According to the state department of health, only eight cases occurred at the Mandan institution in two years.

OHIO

Bills Introduced—S 45 proposes to require the annual vaccination of all dogs against rabies. S 51 proposes to regulate the practice of cosmetology. S 58 proposes to exempt from the provisions of the medical practice act "persons treating human ailments by prayer or who only practice religious tenets of their church, if no material medicine, manipulation or material means are prescribed or used, is an exercise or enjoyment of religious freedom provided that the laws rules and regulations relating to communicable diseases and sanitary matters are not violated."

OKLAHOMA

Personal—Dr George N. Bilby, Alva, was appointed state health commissioner January 13, by Gov. W. H. Murray. He succeeds Dr. Clyde W. Beson.

Bills Introduced—H 23 proposes to create a board of barber examiners and to regulate the practice of barbering. H 38 proposes to provide that any person not residing within an incorporated city, who shall state under oath to any physician in the county in which he resides that he is not able to pay for medical services shall receive such medical aid as the physician deems necessary. The physician shall be paid one-half of the legal fee for such services rendered from a fund of \$38,500, which is appropriated by the bill.

OREGON

Bill Introduced—S 103 requires all applicants for licenses to practice any form of the healing art to pass an examination, to be given by the state board of higher education, in anatomy, physiology, pathology, chemistry and hygiene before presenting themselves for examination by their respective professional or cult boards.

Society News—The Oregon Pathological Society was recently organized by pathologists of the state medical society. Officers are Drs. Frank R. Menne, president, William M. Wilson, vice president, and Warren C. Hunter, Portland, secretary-treasurer. Meetings are to be held the second Monday in each month at the University of Oregon Medical School.—Dr. Ernest A. Woods, Ashland, discussed "Vision and Color Perception" at the Jackson County Medical Society, Ashland, Oct. 16, 1930.—Dr. Carl Henry Davis, Milwaukie, addressed the Portland Academy of Medicine, Dec. 11, 1930, on "Leukorrhea—A Neglected Symptom."—Dr. Horace J. Whitacre, Tacoma, addressed the Portland City and County Medical Society, January 9, on "The Financial Problem of the Wage-Earner in Illness."

PENNSYLVANIA

License Revoked—The state board of medical education and licensure revoked the license to practice medicine in Pennsylvania of Dr. Frederick J. E. Sperling, Wilkes-Barre, January 30, because of his conviction in the county courts of having performed a criminal abortion.

Society News—The twenty-third annual session of the Pennsylvania Conference on Social Welfare will open at Reading, February 25. Drs. Kendall Emerson, New York, and James Allen Jackson, Danville, among others, will speak on "Recent Progress in the Public Health Field" and "Role of Mental Hygiene in the Promotion of Mental Health," respectively.

Bills Introduced—S 33 provides that in certain counties where the fines, penalties and moneys collected from forfeited recognizances are paid into the county treasury, one-half of such sums shall be appropriated to such hospitals within the county as are entitled to receive state aid. S 34 proposes to authorize any borough to appropriate money for the support of any hospital which is engaged in charitable work and extends medical attention to residents of such borough.

Philadelphia

Personal—Dr. Rufus B. Weaver celebrated his ninetieth birthday January 10, with an informal reception at the Hahnemann Hospital, where he is a patient. Dr. Weaver was a teacher at Hahnemann Medical College for fifty-five years. In 1909 he received the first honorary fellowship of the Phila-

delphia Academy of Medicine, in recognition of work in anatomy.

Society News—Dr. George P. Muller, president of the Philadelphia County Medical Society, was elected president of the Health League of Philadelphia at a recent meeting.—The Philadelphia County Medical Society conducted its annual "Heart Night," February 11. Dr. Alexander Lambert, New York, spoke on "Sudden Death and Cardiac Pain," and Dr. Harlow Brooks, New York, gave an informal talk on "Angina Pectoris."—Dr. Damon B. Pfeiffer was the speaker, February 6, at the postgraduate seminar under the auspices of the Philadelphia County Medical Society on cancer of the lower bowel.—Drs. Alexander Randall and Karl Kornblum spoke on intravenous urography, and Dr. Charles H. Frazier on "Technic for an Operation for Blepharospasm," before the Philadelphia Academy of Surgery, February 2.—Dr. Arthur I. Wagers addressed the Philadelphia Laryngological Society, February 3, on prevention of acute surgical mastoiditis.—Dr. William J. Merle Scott, Rochester, N. Y., delivered the twenty-fifth Mary Scott Newbold lecture at the College of Physicians of Philadelphia, on sympathetic activity in diseases of the peripheral circulation.—Dr. Jesse O. Arnold, among others, addressed the Obstetrical Society of Philadelphia, February 5, on "Fluid Balance in the Treatment of Eclampsia."

SOUTH CAROLINA

Bills Introduced—H 117 proposes to provide that before a marriage license may issue the male applicant must submit a certificate of a reputable physician stating that the male party is free from all venereal diseases at a time not more than ten days prior to the date of such application. H 170 proposes to regulate the practice of barbering, which includes "the removal of superfluous hairs, warts, moles, or other blemishes from the scalp, face, neck or upper part of the body."

SOUTH DAKOTA

Illegal Practitioner Fined—Carol Irwin, Sioux Falls, is reported to have pleaded guilty recently to the charge of practicing medicine without a license and was fined \$50. This person is a white woman known locally as an "Indian herb doctor." The case was prosecuted by Messrs. Wall and Conaway, assistant state's attorneys. Dr. Carl William Forsberg, Sioux Falls, testified for the state.

Bills Introduced—H 33 proposes to repeal that law which provides that in a levy or execution on a judgment for a physician's bill no exemption can be claimed except absolute exemptions and household and kitchen furniture. An absolute exemption is stated by the present law to include family pictures, pew or burial lots, family bible and books, and wearing apparel. H 96 requires all pharmacies to be registered with the board of pharmacy and to require all pharmacies to be owned by licensed pharmacists.

TENNESSEE

Society News—The new full time health unit of Maury County started functioning, January 1, with Dr. Hannan C. Busby as director. It was made possible by the county court appropriating \$3,500, the city of Columbia, \$1,500 and the state \$5,000, an annual total of \$10,000.—Dr. Henry B. Gotten addressed the Memphis and Shelby County Medical Society, Dec. 2, 1930, on malignant tumors of the small intestine, and Dr. William Battle Malone, on chronic cystic mastitis.

Bill Introduced—H 514 proposes to accord liens to hospitals, physicians, surgeons and nurses, performing services for persons who have suffered personal injury, on any settlements or judgments obtained by reason of the injuries. Such a lien, however, shall not attach to any recovery or settlement had by reason of the workmen's compensation act. A physician, surgeon or nurse refusing or failing, when requested to do so by the injured person or his representative, to testify as to all relevant facts of the case within his or her knowledge shall not be entitled to the lien.

TEXAS

Bills Introduced—S 103 proposes to direct the state board of health to cooperate with the United States Public Health Service in eradicating malaria in Texas, and to appropriate \$50,000 for that purpose. H 96 proposes to provide that only a store in which a registered pharmacist is employed, and which conforms to the provisions of the pharmacy act, may be designated and advertised as a pharmacy or drug store.

UTAH

Bill Introduced—S 21 proposes to regulate the practice of chiroprody, defined as "the examination, diagnosis or treatment medically, mechanically or surgically, of the ailments of the human foot and massage in connection therewith, in all cases except the amputation of the toes or foot or the use of anesthetics other than local"

WASHINGTON

Bills Introduced—S 95 proposes to enact a new law regulating the possession, sale, prescribing or dispensing of narcotic drugs. H 145 seeks to amend the workmen's compensation act so as to permit osteopaths, chiropractors and other drugless healers to render the required medical attention to injured employees

Society News—Dr. Waltman Walters, Rochester, Minn., delivered four addresses as the guest of the Seattle Surgical Society at its annual clinics, February 6-7. Dr. Walters' subjects were "Evaluation of Various Gastric Operations," "Indications for and Results of Conservative Operations on the Kidneys," "Solution of Certain Problems of the Gastro-Intestinal and Genito-Urinary Tracts," and "Obstructive Jaundice. A Clinical and Experimental Study of Its Surgical Aspects."—Drs. Wilfred A. Ash and Maurice F. Dwyer addressed the King County Medical Society, February 2, on "Medical Aspects of High Intestinal Obstruction" and "Clinical and X-Ray Study of Gastric Tumors," respectively

WISCONSIN

Bills Introduced—S 58 proposes to constitute the state health officer, the secretary of the board of medical examiners, and the attorney general an ex officio state medical grievance committee to investigate, hear, and act on practices by persons licensed to practice medicine and surgery that are inimical to the public health. This committee shall have power to warn, to reprimand and to institute criminal actions or actions to revoke licenses. A 39, to amend the workmen's compensation act, proposes that when an employee during the term of his employment discovers that he has a hernia such fact shall be prima facie evidence that such hernia developed during the course of the employment

Society News—Drs. John B. Wear, Madison, and Drexel L. Dawson, Rice Lake, addressed the Barron-Washburn-Sawyer-Burnett County Medical Society at Cumberland, Dec. 2, 1930, on 'Renal Infection' and 'Spinal Anesthesia' respectively.—Dr. Frederick J. Gaenslen, Milwaukee, gave an illustrated address on 'Injuries and Diseases of the Knee Joint' before the Brown-Kewaunee County Medical Society, Green Bay, Nov. 25, 1930.—Dr. William F. Lorenz, Madison, among others, addressed the Grant County Medical Society at Lancaster, Nov. 25, 1930, on "Clinical Applications of Cerebrospinal Fluid Findings."—Dr. Ira R. Sisk, Madison, addressed the La Crosse County Medical Society, Nov. 18, 1930, on "Management of the Patient with Hypertrophy of the Prostate Gland."—Drs. Eben J. Carey, Milwaukee, and Hugh Cabot, Rochester, Minn., addressed the Milwaukee Academy of Medicine, Dec. 9, 1930, on 'Etiology of Pathologic Bone Growth' and 'What Constitutes Real Conservative Surgery of the Kidney,' respectively. Dr. Richard J. Muenzner addressed the academy, Dec. 10, 1930, among others on 'Cavernous Sinus Thrombosis with Recovery.'—Dr. Elven J. Berkhiser, Chicago, addressed the Outagamie County Medical Society, Appleton, January 15, on infantile paralysis.—Dr. Francis D. Murphy, among others, addressed the Medical Society of Milwaukee County, January 9, on complications of diabetes mellitus.—The Dane County Medical Society was addressed, January 22, at Madison by Drs. Frank F. Bowman on 'City Health Program for Diagnosis and Management of Pulmonary Tuberculosis,' Harry M. Guilford, 'Incidence of Tubercular Malaria and Undulant Fever,' and William D. Stovall, 'Value of Laboratory Methods for Diagnosis of Whooping Cough.'—Dr. Elmer L. Severinghaus, Madison, addressed the Marathon County Medical Society, January 15, on 'Menopausal Disturbances and Hypertension.'

WYOMING

Bills Introduced—S 32 proposes to create a board of barber examiners and to regulate the practice of barbering. S 37 proposes to impose a penalty for practicing medicine, surgery or obstetrics without first having received and recorded with the county clerk of the county in which the licensee practices a certificate from the state board of medical examiners. H 82 proposes to except from the provisions of the

medical practice act "persons treating human ailments by prayer or spiritual means, as an exercise or enjoyment of religious freedom, and provided, further, that the laws, rules and regulations relating to communicable diseases and sanitary matters are not violated"

GENERAL

Unauthorized Solicitor—R. J. Thomas, aged 37, height 5 feet 10 inches, with auburn hair and hazel eyes, is not an accredited agent of the American Medical Association. Authorized solicitors carry credentials signed by Dr. Olm West, Secretary and General Manager of the Association

Medical Relief in the Drought Area—A conference of health officers in the drought area was called by Dr. Hugh S. Cumming, surgeon general of the U. S. Public Health Service, for February 10, at Memphis, Tenn. The purpose was to make a survey of health conditions and to ascertain what steps might be necessary in the purchase and distribution of medical supplies for these areas, as provided in a deficiency bill passed by Congress appropriating \$2,000,000 for the work

New Instruments for Old—Recently a young man carrying a bag of cystoscopes and a Wappler catalogue, called on Dr. Herman L. Kretschmer, Chicago, and failing to complete a sale, offered to exchange some new cystoscopes for old ones and the difference in price. Dr. Kretschmer selected two cystoscopes from the catalogue and gave the young man four old ones and agreed to pay \$88 on the delivery of the new instruments. After waiting a few months, Dr. Kretschmer wrote the Wappler company. In reply he was told that they had no such representative on the road

Entrance Requirements at University of Vienna—The dean of the Medical Faculty of the University of Vienna, Austria, has notified the American ministry at Vienna that American citizens who file application to become regular students in the medical department must have the degree of bachelor of science or bachelor of arts. In addition, prospective students must comply with the minimum American requirement that is, twelve hours of chemistry, eight hours of biology and eight hours of physics. They must also take in Vienna a part of the examination (rigorosum) in anatomy, histology and physiology

Report of National Leprosarium—Twenty-three patients were released from the National Leper Home, Carville, La., during the year ended June 30, 1930, the annual report to the U. S. Public Health Service shows. Eight additional patients were eligible for parole, but because of their disfigurement elected to remain at the hospital. Fifty-five new patients were admitted and twenty-two died. Of 308 under treatment 163 were receiving chaulmoogra oil by mouth and 120 were receiving intramuscular injections of benzocaine chaulmoogra oil. Approximately twenty are permanently maimed. In the neuro-psychiatric service forty-five new patients and seventy-nine old patients were examined and advised concerning neurologic manifestations. Seven were confined to the psychopathic ward. Experimental work including the use of various drugs in the treatment of leprosy, treatment of nasal lesions in the hope of preventing involvement of the eyes, administration of mesterol in orthopedic cases and roentgenologic study of bone changes are discussed in the report

Medical Bills in Congress—H. R. 16591 introduced by Representative Leach, Pennsylvania, proposes the erection of a veterans hospital at or near Creson, Cumberland County, Pa. H. R. 16620 introduced (by request) by Representative Johnson, South Dakota, proposes among other things to make it mandatory that hospitalization and outpatient and dispensary treatment be recorded all veterans disabled from any cause. H. R. 16658 introduced (by request) by Representative James, Michigan, proposes to authorize the construction of additional hospital facilities at the various branches of the 'Bureau of National Homes.' H. R. 16659 introduced (by request) by Representative Johnson, South Dakota, proposes to establish a permanent medical service in the United States Veterans Bureau. H. R. 16693 introduced by Representative Wood, Indiana, proposes that the Administrator of Veterans Affairs be authorized to purchase the West Baden Springs Hotel, West Baden, Ind., for the hospitalization of veterans. H. R. 16702 introduced by Representative Foss, Massachusetts, proposes to authorize the enlargement and modernization of the veterans hospital at Rutland, Mass. H. R. 12169 has been favorably reported to the House proposing to define what constitutes the practice of naturopathy in the District of Columbia (Report No. 2432). S. 5959 introduced by Senator Walsh, Montana, proposes that the surgeon general of the public health

service be authorized to purchase from the state of Montana the state laboratory at Hamilton Mont constructed for the prevention, eradication and cure of spotted fever S 5961, introduced by Senator Hufield West Virginia proposes to provide federal aid to the several states in the care treatment education vocational guidance and placement and physical rehabilitation of crippled children S 255 the Jones maternity and infancy bill, has been reported with amendments to the House (Report 2485) It was amended in the House Committee on Interstate and Foreign Commerce by striking out all after the enacting clause and inserting the amended provisions of H R 12995, the Cooper Robison bill providing that the United States shall cooperate with the states in promoting the general health of the rural population as well as the welfare and hygiene of mothers and children H R 3594, providing for the deportation of aliens convicted of violating the Harrison Narcotic Act has been reported to the Senate without amendment (Report 1443) H R 9676 authorizing the Secretary of Navy to proceed with certain public works at the United States Naval Hospital Washington, D C has been reported to the Senate with amendment (Report 1436) H R 10166 has passed the Senate with amendments proposing the reconstruction of the Naval Hospital at Philadelphia S 5984, introduced by Senator Copper Kansas and H R 16777, introduced by Representative Zihlman Maryland propose to authorize the construction of a sanatorium for the District of Columbia for adult tuberculosis patients S 5986 introduced by Senator Wheeler Montana, proposes to make it mandatory that the Administrator of Veterans' Affairs furnish hospitalization for all veterans not dishonorably discharged without regard to the nature or origin of their disabilities and to create service origin presumptions for any chronic or constitutional disease which developed a 10 per cent degree of disability prior to Jan 1, 1925 S 6015, introduced by Senator Wagner, New York proposes to provide for the retirement of certain medical reserve officers of the United States Army Navy and Marine Corps S 6019, introduced (by request) by Senator Reed, Pennsylvania, proposes to amend the World War Veterans' Act to provide among other things, that the Administrator of Veterans' Affairs shall furnish hospitalization and outpatient and dispensary treatment to all veterans not dishonorably discharged without regard to the nature or origin of their disabilities S 6020 introduced (by request) by Senator Reed Pennsylvania, proposes to establish permanent medical service in the United States Veterans' Bureau H R 16782, introduced by Representative Smith, Idaho proposes to authorize the erection of a veterans hospital at Lava Hot Springs, Idaho H R 16837, introduced by Representative Shott, West Virginia, proposes to provide for federal cooperation with the several states in the care, treatment education vocational guidance and placement, and physical rehabilitation of crippled children H R 16854, introduced by Representative Douglas, Arizona, proposes to provide for the erection of an addition to the veterans' hospital at Tucson Ariz H R 16853 introduced by Representative Douglas, Arizona proposes to authorize the erection of an addition to the veterans hospital at Whipple, Arizona S 3344, a bill supplementing the National Prohibition Act for the District of Columbia was considered by the Senate during the week beginning February 2 An amendment to the bill proposed by Senator Hawes Missouri, which would have removed in the District of Columbia the restrictions imposed by the National Prohibition Act on physicians with respect to the prescribing of vinous and spirituous liquor, was defeated by a vote of 45 to 25

MEXICO

Mexico Limits Influx of Foreign Physicians—The secretary of the interior of the Republic of Mexico has issued instructions to the department of immigration to the effect that foreign physicians will not be permitted to enter the country to practice unless they have previously been authorized to do so by the department of the interior These instructions were based on a recommendation from the department of public health which pointed out that many of the foreign physicians coming to Mexico to practice do so under false claims having received their certificates of graduation in medicine either from a diploma mill or having obtained it otherwise by irregular means Some practice under their second name when it happens to be the same as the last name of a widely known physician The department of public health has received complaints from victims of foreign quacks An additional reason for restricting the immigration of foreign physicians is the severe economic condition of Mexican physicians and the fact that the influx of foreign physicians makes worse the economic situation of the physicians

Foreign Letters

LONDON

(From Our Regular Correspondent)

Jan 17, 1931

The Most Significant Relic of Primitive Man

At University College, Prof G Elliot Smith gave a lecture on the Peking man, with the Chinese minister presiding He described the cranium found in the limestone cave near Peiping, Dec 2, 1929, as the most significant and illuminating relic of primitive man ever recovered Its characters established a bond of union between the other two types of early man comparable in age, *Pithecanthropus* of Java and *Eoanthropus* of Piltdown, England, which before this discovery seemed to be irreconcilable with each other and were both regarded with doubt The finding of *Sinanthropus* was important not only for the intrinsic evidence it provided but also because it conferred respectability on the other two The investigations in China had established confidence in the other two genera and destroyed doubts regarding their nature and significance The evidence of the geological age of the Peking man—the early Pleistocene—was more certain than that of the other two for the remains were found on the spot where their original owners left them when they died in the cave The vast collection of animal bones which had been carefully studied, belonged to creatures contemporaneous with Peking man They had been studied by many competent paleontologists who agreed that they referred to an epoch more recent than the Pliocene This could not be translated with certainty into figures of years, but Prof A W Grabau of Peiping University believed that the changes in the radioactive elements in early Pleistocene rocks suggested 1 000 000 years Whether or not the Peking man was older than the fossils of Java and Piltdown there was no doubt that he represented a more primitive type His characters were more generalized some being distinctly reminiscent of man's simian ancestry and others foreshadowing qualities regarded as distinctive of *Homo sapiens* They made it easier to picture the original characters of the human family by revealing a type which, though human was curiously apelike and obviously close to the main line of descent of modern man In spite of the thoroughness of the investigation, eminent paleontologists were making erroneous statements In France and Germany they were claiming already that Peking man belonged to the genus *Pithecanthropus* in America that he was a Far Eastern example of Neanderthal man, and others again that the Chinese fossils were not human Having just made a careful examination of the remains on his visit to China and compared them with human and simian skulls, Prof Elliot Smith confidently supported the claim of the Canadian anatomist Dr Davidson Black that *Sinanthropus* was a member of the human family who revealed in every quality of his skull evidence to distinguish him from all known human types and to justify the separate generic rank suggested to define his status

The Centenary of James Maxwell

The University of Cambridge, October 1 and 2, will celebrate the birth of James Clerk Maxwell who, after Newton, may be regarded as the greatest scientific genius of Britain He was the founder of the great school of experimental physics in Cambridge He died at 49, before the world appreciated his genius During his short life he translated the results of Faraday's experimental work into exact mathematical form and laid the foundations of general electromagnetic theory by his treatise on electricity and magnetism His discovery of the electromagnetic nature of light led directly to the development by later workers of wireless communications, while his name is forever linked with the fundamental laws of the theory of gases Addresses will be given at the celebration by great con

temporary scientists—Einstein, Langmuir, Larmor, Planck, Jeans and J. J. Thomson. Maxwell's connection with Faraday makes it appropriate that his centenary should follow the September celebration in London of the centenary of Faraday's discovery of electromagnetic induction.

Altering the Constitution of the Royal College of Surgeons

There are about 2,000 fellows of the Royal College of Surgeons and 18,000 members. The fellows pass a higher examination in surgery and are designated FRCS. They are surgeons in the full sense of the term and generally are members of hospital staffs. Many of them practice only surgery or one of its special branches. They include all who are eminent in English surgery. The members pass a lower examination devised for those who will engage in general practice, and are designated MRCS. They usually practice surgery only in a minor form, their working being mainly medical. The college is governed by the council, which is elected from and by the fellows. The only occasion on which the members have an opportunity to say anything as to the government of the college is the annual meeting of members and fellows, when they can bring forward resolutions, which are submitted to the council. At this meeting they have for forty-two years passed a resolution that the members should be given the power to elect representatives on the council. This the council has always refused. At the 1929 meeting the members were twitted by the president, Lord Moynihan, with the fact that the number who attended was small (about fifty) and that he always saw the same faces. There was therefore no evidence that representation was desired by the members at large. At the 1930 meeting, which recently took place, the members demanding representation replied by bringing forward the result of a poll taken by postcard in Great Britain and the Irish Free State. This showed that for 12,766 cards sent out 6,832 votes were received in favor of representation and only 156 against. At the meeting, much was made of this, the argument was the "justice" of the claim for representation of nine tenths of the college roll and the need to protect the members against unqualified practitioners. The last argument shows a desire to bring the college into medical politics and to engage in work already fully performed by the British Medical Association. When a vote was taken, the request for representation was carried by 43 votes to 1. The president said in reply that the question of representation of the members had always been regarded by the council as of the gravest importance and that a special meeting would be held to consider the resolution. At this meeting the council adopted the following resolution:

The main functions of the college are to promote and encourage the art and science of surgery for the common weal and for this purpose to conduct the examinations of the college and to maintain the great museum and library placed under its care. In carrying out these functions the council organizes lectures and demonstrations, provides facilities for and encourages research, fosters social intercourse and the amenities of the profession and in every way possible renders the college an instrument for the advancement of surgery in its widest sense not only for the benefit of the members and fellows but the whole profession throughout the empire. In the opinion of the council these functions are well carried out under the present constitution after further and prolonged deliberation the council has therefore decided that it is not desirable to alter the constitution of the college by providing for the direct and separate representation of members of the college upon the council. The decision of the council is in conformity with the opinion expressed three years ago by the body of fellows of the college who are the electorate.

Though the agitation of the members for representation on the council has been carried on for forty-two years and has received some support in the medical press the decision of the council is right. Its claim that the functions of the college are well carried out under the present constitution is abundantly proved and has never been questioned. The handful of politically minded members who carry on the agitation has never been able to suggest any fault in this respect or indeed shown any interest in the functions. The members have not the competence of the fellows for the government of the college for they are not

surgeons in the important sense of the term but general practitioners. One of the objections of the agitators, as revealed at the annual meetings, is to drag the college into medical politics. This would be a descent from its proper sphere, which is purely scientific. It maintains the greatest pathologic museum in the world, which is a development of the collection made by the "father of scientific surgery," John Hunter. It is the home of English surgery. It does everything possible for the advancement of surgery. It maintains also a library and laboratories for research, in the highest degree of efficiency, and organizes lectures by all who are contributing to the advance of surgery. The conservator of the museum is Sir Arthur Keith, who is famous as anatomist, physiologist, pathologist and anthropologist. It is to be hoped that the control of this great college will remain in the hands of "surgeons," without any intrusion of those inspired by motives which have nothing to do with the advancement of surgery.

BERLIN

(From Our Regular Correspondent)

Jan 5 1931

Attack on the Law Concerning Abortion

Dr. Julius Wolf, professor of political science, launched an attack recently on section 218 of the penal code, which pertains to abortion, in a work entitled *Mutter oder Embryo*. He advances arguments to prove that the present law is a survival of barbarism, emphasizing the misery of the woman who becomes a mother against her will, and the great suffering caused by abortion brought about by charlatans. With passionate zeal he takes up the cudgels against all those (ethicists, religious jurists, physicians) who approve all kinds of modifications and exceptions but who support the law imposing penalties on abortion. He urges that the civil state has not recognized that the care of the child is the correlate of the duty to give it birth or at least that it has not fully grasped the significance of the fact. Per se, Wolf is an opponent of abortion for he does not fail to recognize, nor does he minimize, its moral and physical dangers. He, too, gives prophylaxis the preference. But in addition to the medical indications stated in the draft of the penal code, he recommends making the interruption of pregnancy permissible, on request of the gravida, within the first three months of pregnancy if the capacity of the gravida to bear children is reduced, if offspring is undesirable for eugenic reasons, or if financial conditions constitute a contraindication to birth. If such abortions are then carried out according to the best scientific knowledge he contends that that will be a victory for hygiene no less valuable than other attainments of which it may boast.

The majority of physicians in whose hands the interruption of pregnancy lies for the most part (and should lie to a much greater extent) have been unable to accustom themselves to the idea that they should carry out any important intervention for other than medical reasons. As medical reasons they consider the risks affecting the health of the gravida and in this connection they attach a certain amount of importance to economic conditions, since with identical risks the health of a gravida in poor circumstances might be endangered whereas the conditions that obtained would constitute no menace to a woman with adequate means.

It has been pointed out, however, that this so-called official attitude of the *Deutscher Aerztetag* (THEIR JOURNAL July 19 1930 page 216) does not necessarily coincide with that of the majority of the individual physicians. In this connection the results of an inquiry instituted among the physicians of Hamburg are of interest. Of 1,266 questionnaires sent out replies were received to 880. Of this number only 41 expressed themselves in favor of permitting any physician to perform an abortion. 25 would accord such permission only to certain clinical cases. The purely social indications for abortion were approved by 359 and opposed by 517.

The attitude of women physicians toward the question is naturally of great importance. Several months ago, 356 women physicians of Berlin made far reaching demands resembling those of Professor Wolf. Soon afterward an opposing manifesto was issued by another group of women physicians. Recently, the League of German Women Physicians discussed the subject. Women physicians belonging to widely different groups expressed their views. Physicians with experience in German consultation centers on marriage and sex matters and physicians from Russia, gave their opinions. That the present situation for women is beset with many difficulties was admitted by all the speakers and also during the general discussion that followed. The need of providing adequate care for the married and for the unmarried mother was emphasized. The need of a reasonable birth control was universally admitted. However, no definite decision was reached with reference to section 218 of the penal code, pertaining to abortion.

Treatment of Disorders of the Feet

The Deutsche orthopädische Gesellschaft has established criteria for the treatment of disorders of the feet, the purpose being to oppose invasions of medical fields by the administration of sick benefit funds. Therein it is rightly emphasized that only the physician can decide whether in a given case of foot or leg disorder, any treatment is indicated. Therefore, the procuring of inlays from administration officials of the sick benefit funds, surgical supply houses, or shoe stores, without consulting a physician is disapproved. In many cases it is a waste of money, causes dissatisfaction in the minds of patients and not infrequently damages them directly, since the existing disorders are accentuated or serious disorders are overlooked and neglected. In most cases of disorders of the feet an inlay made especially for the patient is absolutely required, just as every eye patient needs a particular lens. The procuring of an individual inlay is, however, the prerogative of the orthopedic specialist. For the majority of foot patients a so called "normal inlay" does not exist, because of the great individual differences in the shape of the feet and in the nature of disorders of the feet. The fitting of individual measurements for an inlay, by means of a plaster-of-paris mold or some other scientific method, is the affair of a specialist and must be done personally by the specialist or must at least be supervised by him directly, and must be paid for as the performance of a physician. Likewise, the fitting of an inlay furnished by a surgical supply house is the affair of a specialist.

The Psychology of the Political Criminal

In times of political unrest, such as are now being experienced, political crime flourishes, and passions and instincts that possibly would have otherwise found a different outlet seek expression in this field. In a recent address, Professor Hubner, psychiatrist of Bonn and director of the university clinic for mental diseases, gave some information on the psychology of the political criminal, basing his statements on some eighty cases dating from the period 1914-1930, the greater portion of which concerned treason and the lesser portion espionage. In this connection he described various types of spies—the cavalier spy—natures that feel a need of expressing themselves and have an uncontrollable fondness of adventure who, as a rule, are not influenced by the greed of gain, natural swindlers, who are driven to take up espionage by a desire for gain, and the passive, unsteady natures, who are sought out by the opponent and are utilized for his purposes. Many hysterics or cyclothymics are induced by a certain fondness for boasting to betray secrets they have learned of by chance—without thinking of the fact that the act is punishable by law. Among these types, alcoholism and morphinism play a big part. Professional spies are nearly all caught, and either commit suicide or receive severe penalties. Most of them never settle down to a regular life. Among the types of revolutionists those who furnish the brains for the enterprises stay always in the background and thus rarely incur any great danger. Such

organizers and promoters are cool, calculating, conscienceless personalities, highly sensitive and possessing a high self esteem, who display great shrewdness in choosing their tools for the execution of their plans. Among these are the propagandists possessed of certain powers of oratory, together with considerable histrionic talent—persons who are fond of being in the forefront and who exert no slight influence over the masses. They are not always persons of high intelligence, and they present only in part ideas of their own, they are often lacking in critical judgment and, as a rule, do not maintain their position long. But the propagandists who have the capacity and the inclination to put their words into action take a definite stand for their political convictions, though they know that their influence will be of limited duration and that they are doomed to meet disaster. They are impetuous natures that shun no personal danger and that win temporary success through inspiring fear in their milieu. Another less common type of revolutionist are the fantastic world reformers—often dreamers unable to distinguish the feasible from the impossible. They are egoistic, petty and revengeful characters that do not maintain themselves long as leaders. Also the discontented and complaining types, which desire a change in conditions but usually do not possess the capacity of creating anything new, quickly pass off the stage. The last group is composed of submissive conformers, among whom there are many persons greedy of gain who have been raised to a position of prominence by chance. Their goal is not political and they readily assent to the opinions of the ruling majority until they have achieved their aim or have been forced by conditions to comply. Among the subjects examined by Hubner there were alcoholists, morphine addicts, imbeciles, epileptics, hysterics and schizophrenics. The most dangerous types are the "gustige urheber," or persons with an impelling desire to launch something new and startling, and the "propagandisten der tat," propagandists who insist on expressing their views by energetic and oftentimes violent action.

ITALY

(From Our Regular Correspondent)

Dec. 15, 1930

Congress of Industrial Medicine

The ninth Congresso nazionale di medicina del lavoro was held recently in Rome, at the Istituto di patologia medica del Policlinico. Professor Devoto of the University of Milan, in his inaugural address, after summarizing the most recent manifestations concerning the pathology of labor, emphasized the importance of the topic to be discussed. "The Problem of the Respiratory Pathology of Dusts."

RESPIRATORY DISEASE AND DUST

The discussion of the first topic, "Respiratory Diseases Due to Dusts," was divided into several parts, each assigned to a different speaker. Professor Caccari of Naples, who discussed part I, on the etiology and pathogenesis of respiratory diseases due to dusts, pointed out that, with the progress of social legislation and with the extension of insurance against disease, this group of disorders would certainly be included among the diseases for which compensation can be claimed under the workmen's compensation act. It is advisable, therefore, to collect in advance all information necessary to facilitate the work of the physicians who are called on to decide on the relations between a pathologic condition and the mode of employment, and hence admit or deny the compensability. According to the speaker, the term "pneumoconiosis" should be restricted to cases of pulmonary fibrosis, while all the other respiratory disorders that are due to dusts and are strictly associated with the work in which the workman is engaged should be designated respiratory diseases due to dusts. It seems advisable to divide dusts into two groups, according as the action is mechanical or chemical. Many classes (workers in tobacco, cotton, hemp, flour, cement, ceramic products) are frequently subject

to bronchitis. True types of pneumoconiosis are encountered among those who work in surroundings where there is siliceous dust, whether pure or mixed with other substances (miners of coal, granite, asbestos, gold, iron, stone cutters, workers in ceramics). Workers in hemp, linen, silk, furs, and the like, suffer frequently from bronchial asthma. Miners of cobalt develop frequently cancer of the lung. According to recent research, pulmonary anthracosis should not be considered as a disease, if the black pigment is pure carbon, without a trace of silica, it cannot provoke pulmonary sclerosis, it is, however, the cause of a morbid state and may give rise to pathologic changes of various kinds.

With respect to the manner in which the particles of dust permeate the various zones of the lung, it is necessary to take account not only of the lymph currents but also of the continual stretching that the lungs undergo during the respiratory acts. Often the patient does not complain of any disturbance and it is only the radiologic examination, together with the functional tests, that reveals the deviations from normal. Before subjective and objective disturbances can arise, the so called margin of safety must be exceeded, for, in general, it may be stated that there is an excess of pulmonary tissue. Some dusts provoke a state of general hypersensitivity, which affects more particularly the respiratory apparatus, giving rise to an asthmatic syndrome.

The paper on part II, concerning the pathologic anatomy and the clinical aspects of respiratory diseases due to inhalations of dust, was presented by Professor Coppa of Naples, who distinguished, among the disorders of the organs of respiration, due to inhalation of dust, diseases of the upper air passages, diseases of the trachea and the bronchi, and pulmonary diseases. For each group of disorders he described the means of defense employed by the organs of respiration and the pathogenesis of the lesions that develop. Nearly all these morbid types are of a chronic nature. One of the more grave lesions is chronic catarrhal rhinitis, which is frequent in all the classes of workmen who work in a dust laden atmosphere. This lesion is important, not only in itself but also because it induces a lessening of the means of defense available to the organism for the limitation of the invasion of dusts into the lower air passages. Other lesions characteristic of the nasal cavities are ulceration of the septum, found in workmen who come in contact with dusts of chromates and also in cement workers. The inhalation of calcium dust gives rise to burns of the oral cavity, which, though slight are painful. The bronchial disorders are rather more important than those of the pharynx and of the larynx. The most harmful for the bronchi are the siliceous dusts. Among sulphate workers, textile workers and the like stubborn chronic bronchitis is found and in the sputum it is easy to discover, without the aid of the microscope the characteristic elements of the inhaled dust. Sometimes the sputum has a characteristic color, being black among the coal miners, pinkish among those who inhale the dust of iron oxide and grayish or bluish in sulphate workers. Among the pulmonary disorders due to dusts the chronic forms have occupational characteristics. The speaker suggested dividing them into three large groups: (1) pneumopathies due to dusts of local mechanical chemical action; (2) pneumopathies due to dusts of humoral action; (3) pneumopathies associated with tuberculosis, tumors or mycosis. The first group is the most numerous and the most important. To this class belong also the pneumoconioses. By pneumoconiosis is meant only chronic interstitial pneumonitis such as was described by Zenker and which is characterized by extensive processes of fibrosis with areas of atelectasis and emphysema and with production of cavities. Between the subjective disturbances and the results of the radiologic examination on one hand and the clinical examination there exists a notable disagreement that is absolutely typical of pneumoconiosis. The diagnosis of this morbid type is reached by ruling out above all tuberculosis and by

evaluating then all the anamnestic, environmental and individual data, with the aid of the radiologic examination and the examination of the sputum. The second group of pneumopathies, caused by dusts of a humoral action, includes the anaphylactic disorders of occupational origin, such as pollenosis and bronchial asthma. Often it is not easy to discover the hypersensitizing cause which may be the inhalation of the dust of cement, or porcelain and the like.

Dr Sgambati Pastena of Naples took up at this point the discussion of part III, radiologic research in pneumoconiosis. The speaker described the radiologic picture of pneumoconiosis, which varies according to the three stages of the morbid process. The first stage is characterized by an accentuation of the pulmonary design. There is an absence of clinical phenomena and subjective disturbances. In the second stage, there is observed a uniform punctate appearance of the pulmonary tissue, due to the presence of numerous small foci. The shadows of the hilus are enlarged. There is some evidence of dry localized pleuritis, and sometimes there is a slight emphysematous condition of the base. In this stage the subjective disturbances are slight and the clinical signs scarce. In the third stage one observes large roundish shadows, with rather clear outlines scattered over the pulmonary fields of varying size and localized chiefly in the middle areas. The apexes are nearly always immune. The pleuritic signs are more marked. Subjectively the disturbances in this stage are noteworthy, and the clinical signs are numerous but always disproportionate to the radiologic manifestations. The characteristic phenomena, from the radiologic point of view, for the diagnosis of pneumoconiosis are: aspect of the lungs resembling wet snow; symmetrical localization of the lesions, with prevalence in the middle portion of the pulmonary fields; apexes normal; apparent discrepancy between the radiologic manifestations and the clinical data. The differential radiologic diagnosis between pneumoconiosis, tuberculosis, tumors and pulmonary syphilis is often rather difficult and should be supplemented by clinical and laboratory data. The speaker closed his discussion by proposing the drafting of a resolution to be sent to the authorities in charge of industrial hygiene to the effect that all workmen admitted to dusty employments be obliged to furnish a recent genogram of their lungs. The adoption of this proposal (previously advanced by Tandoia and Karim-Marmucci, at the International Congress of Tuberculosis held in Rome with respect to the sons of tuberculous persons) would make it possible to admit to such industries only persons whose respiratory apparatus is sound. By repeating periodically the radiologic control it would be possible to detect a quiescent pneumoconiosis by the clinical signs before it could do serious damage to the health of the workmen.

Many conventionists took part in the discussion of the topic in hand. Professor Quarelli emphasized the need in every case of giving a radiologic examination. He brought out the importance of the intervention on the reticulo endothelial system of the lung in pneumoconiosis and referred to his recent researches on the behavior of cholesterol in asbestosis. In this disorder the speaker found diminution of the cholesterol content of the blood.

Professor Devoto while not denying the existence of positive radiologic pictures in cases of pulmonary silicosis without clinical symptoms declared them to be rather rare. He suggested that the congress should apply to the Consiglio nazionale delle ricerche to obtain the necessary aid to carry on extensive researches on pneumoconiosis due to sulphur. The studies should be done in Sicily where sulphur abounds and could be carried out at the Clinica medica in Catania which is under the direction of Professor Ferrarini.

Dr Turano asserted that the marble dust of Carrara is harmless and holds that it is incapable of producing changes in the respiratory apparatus.

Professor Ferrarini, in view of the importance that the sulphur industry has in national economics, considers it necessary to make a profound study of the diseases associated with the handling of sulphur.

Numerous unofficial communications were presented. Caiso of Naples considered the respiratory diseases of coal hewers. An inquiry made on 450 coal hewers, in the port of Naples, revealed that 85.5 per cent of them were affected with diseases of the respiratory apparatus, with a prevalence of diffuse bronchial catarrh (64.2 per cent). Caiso carried out spirometric researches on coal hewers and microscopic researches on their expectorations. He noted diminution of the respiratory capacity and the presence in the sputum of exfoliated cells mixed with particles of coal. Caiso explained his method of research for the chemical diagnosis of coal in intracotic pulmonary tissue. Pignatari found that, among workers in hemp, 70 per cent were affected with diffuse bronchial catarrh, 10 per cent with bronchial asthma and 20 per cent with apical sclerosis.

The communications having been presented, Professor Ranelletti spoke on the postgraduate school of industrial medicine, recently established at the University of Rome.

Milan was selected as the meeting place for the next congress, which will be held in 1932, since in 1931 an international congress will be held at Geneva. The topics on the program are: (1) the work of intellectuals, (2) work in the fields, and (3) the pathology of solvents.

BELGIUM

(From Our Regular Correspondent)

Jan. 3, 1931

The Congress of Occupational Medicine

The twenty-second *Congrès de médecine professionnelle*, held at Brussels, was well attended. There were three topics on the program, in the presentation of which the following conclusions were brought out:

THE EXCESS OF PHYSICIANS

There is an excess of physicians in parts of the country and it is feared that the same condition will exist in all the provinces. The congress passed a resolution to the effect that a committee, on the basis of the indications pointed out in the discussions, should inquire into the best means of remedying the condition, among others: (1) the recovery, for the benefit of the medical profession, of a number of special sources of income that have been allowed to slip gradually into the hands of persons not authorized to practice the art of healing, (2) an energetic movement, with the use of all possible recognized means, to induce more young Belgians to take up a colonial career.

SOCIAL INSURANCE

The *Fédération médicale belge*, which comprises nearly all the members of the medical profession in Belgium, intends to give its loyal support to the proposed system of social insurance, provided the insurance law does not interfere in any way with the free practice of medicine. Consequently, the twenty-second *Congrès de médecine professionnelle* trusts to the directing committee and to the *Commission des assurances sociales* to bring it about that the law as passed by parliament shall be in absolute conformity with the *charte médicale* unanimously adopted by the general assembly Dec. 8, 1929. It passed a resolution that all the articles of the *charte médicale* be officially endorsed by the law. The congress passed also the following resolutions: 1. Previous to the passage of the social insurance act the congress advocates the passage of the bill creating an ethical order of physicians the purpose of which is to protect the medical profession by reducing to a minimum the fears and the constant criticisms offered with reference to social insurance. 2. Medicine must retain its free and independent character and especially the role of the family physician which is in no wise incompatible with social medicine must not be impaired by

overstandardization, which takes the soul out of medicine. 3. Through the influence of the directing committee, and by all other means possible, the eight points approved by the *Fédération médicale belge*, with reference to the attitude of medicine toward social insurance, should become widely known and accepted. 4. The medical profession of Belgium, and particularly the young men, must be constantly enlightened in regard to the dangers that beset the profession.

THE ADMISSION OF PAY PATIENTS TO HOSPITALS OF THE PUBLIC WELFARE DEPARTMENT

The twenty-second *Congrès de médecine professionnelle*, after discussing the paper pertaining to the terms of admission for pay patients to hospitals of the public welfare department, declared that it appeared incompatible with the law in regard to public welfare that persons with adequate means should be admitted to the hospitals of the public welfare department, but that nevertheless it is ready to approve the granting of such admission in view of recent social developments, provided account is taken of the precise considerations announced to the senate by Senator Digneffe, that is to say, with regard to the free choice of physician and the payment of fees directly to the attending physician. The congress congratulated the committees of the *Assistance publique* that have already accepted this view, much to the satisfaction of all physicians, and urged the public authorities and the general public not to lose sight of the fact that, if this appeal of the physicians is rejected, it will signify the suppression, within a short time, of free medicine and the introduction of state medicine.

School Medicine

The *Comité d'entente franco belge* passed a resolution, based on a communication submitted by Mr. G. Rency, on the subject of overstudy in schools. The congress discussed the fact that there are no physicians among the members of the councils or secondary instruction in Belgium, and recommended that physicians be chosen on these councils, and in general, the extension of the role of the physician in instruction of all ranks or degrees. The congress suggested as a remedy for overstudy a division of the subject-matter and the sacrificing, where overstraining existed, of certain less important study material, in other cases, classes can carry the full load. The congress held that it would be well to distinguish carefully the class hours properly so called from the study hours—preferably under the control of the professor. If the study hours could be carefully controlled, it would bring considerable relief to the pupil. The congress cannot approve the complete suppression of study hours carried on outside the class, as such study is indispensable in several branches of learning, but the instructors should be careful about distributing the tasks of the pupil equitably over the different days of the week.

Mental Patients on Parole

New regulations concerning the discharge on parole of mental patients from institutions have been enacted. The physician, with the written consent of the authority or of the person that caused the internment, can permit the temporary removal of an inmate of an institution or his return to his family on parole. The names of inmates of institutions who are dismissed on parole will be entered by the physician in charge of the hospital in a special register and the competent prosecuting attorney will be immediately notified. Likewise the mayor of the town or commune in which the patient resides. Temporary discharge will become permanent after the lapse of three months unless, before the expiration of such time, the parole period has been prolonged. Such prolongation can be renewed before the expiration of any three months period, except that the total duration of the parole may in no case exceed one year. After the discharge has been declared final, reinternment in the hospital can be accomplished only by means of the usual legal commit-

ment The authorities who had been informed of the discharge on parole should be informed of any prolongation of the parole period or of the reinternment of the patient in the psychopathic hospital

The New Buildings of the University of Brussels

Stirring ceremonies marked the opening of the buildings erected at Solbosch with the aid of the C R B Educational Foundation, and on the boulevard de Waterloo with the help of the Rockefeller Foundation Delegations of Belgian and foreign universities brought to the University of Brussels evidences of the interest of the world of letters Addresses were delivered by J Servais, Rector G Smets, Professor Berthelemy and Minister Vauthier The king summarized the purpose of the ceremonies with these words 'Intellectual cooperation is a pacifying influence the importance of which must be recognized When based on disinterestedness it has an incontestable moral value, the influence of which, it is to be hoped, will be extended as we learn to appreciate its benefits The earnest occasion that has called us together, coming as it does after that celebrating, two years ago the inauguration of the new Louvain library (also under the auspices of our friends in America), acquires thus a special significance that the speakers who preceded me have so ably brought out'

At the inauguration of the School of Medicine, which was attended by the queen, Professor Bordet recalled the memory of Professor Deppe who secured through American philanthropy, these most generous gifts to the university

In well chosen words Mr Gibson, the ambassador of the United States, referred to the important part played by Mr Hoover and Mr Francqui in the creation of the C R B Educational Foundation He called attention also to the great figure of Dr Paul Heger Mr Kenyon's speech in the name of the British delegation and Mr Henri Pirenne's words in behalf of the other delegates were warmly applauded

The Medical Association of Katanga

Under the name of Cercle medical du Katanga an association that groups together as corporate members the doctors of medicine the veterinarians and the pharmacists resident in the province of Katanga to the number of about eighty has been formed This association, an affiliate of the Societe belge de medecine tropicale has been placed under the honorary presidency of Dr Trolli, chief physician of the colony The Cercle medical du Katanga, the headquarters of which is at Elisabethville, will hold monthly meetings of the members residing in the chief town of the province as well as any transients who may desire to attend for the purpose of discussing the questions of hygiene or medicine that have a bearing preferably on local activities and live problems

JAPAN

(From Our Regular Correspondent)

Dec 10 1930

Business Depression and the Hospitals

Since the business depression in this country the patients treated in hospitals have greatly decreased in number with the exception of those treated in charity hospitals During the first six months in 1930 the cases treated in the 150 hospitals in Tokyo amounted to about 303,000 which was a decrease of 154,000 in comparison with the number during the same period in 1929 There are nearly 150 vacant beds in the hospital attached to the medical department of the Tokyo Imperial University where there used to be no vacancy 180 beds are unoccupied in the hospital of the Keio Medical College And the number of outpatients has also fallen to as many as 0.4 per cent a day compared with that of 1929 in the latter hospital On the other hand all charity hospitals in Tokyo are now full of patients and some outpatients come as early as 4 o'clock in the morning The increase in the number of patients is so great that some of the charity hospitals have

had to increase the number of physicians For instance, in the Tsujin Charity Hospital from 250 to 400 more patients are treated every day And those patients free of charge in the hospitals do not like to leave the hospital even after recovery

Birth Control in Tokyo

In spite of strong opposition, the Tokyo authorities mainly through the efforts of the assistant mayor, Mr Shirakami, have kept the office for advice regarding birth control at Shiba in operation since January, 1930 It is reported that he has evolved a new plan of birth control for the benefit of the poor in the city With the aid of the physicians in the municipal hospitals in addition to Dr Mazima, member of the municipal assembly who has been to Europe investigating birth control, the authorities are going to give a course of lectures to municipal employees and social workers in each ward of the city Mr Shirakami intends to have them instruct 9,000 families suffering from the heavy burden of seven or more children with a small income to support them Dr Isoo Abe, one of the leaders of the social democrat party, is of the opinion that by this means the poor will be saved from the great difficulties now encountered in making a livelihood and that one of the problems of population and unemployment will be solved

Number of Physicians in Japan

The number of physicians in this country in 1930 is reported to be 48,804 43,676 of whom are engaged in practice which is 6.94 per 10,000 people The proportion of 15,573 dentists to 10,000 people is 2.31 that of 49,399 wet nurses is 7.69, and that of 18,366 pharmacists is 2.92 In comparison with the number year before last, that of doctors is increased by 944 and 2,791 new graduates are expected from medical colleges at the end of March

First Physical Training Celebration

Under the auspices of the Japan Physical Training Union the first celebration was held in Tokyo, Nov. 2 1930 during health week The ceremony was held in the parks of Hibuya and Ueno and the minister of education attended the latter which was begun at 9 o'clock in the morning During health week the educational ministry planned to broadcast lectures on physical training an address by Baron Yamakawa, chief of the physical culture section of the educational ministry, 'General Survey of Land Sports' by Mr Hirayama, chief of the Japan Physical Training Union Water Sports by Mr Suehiro professor at the Tokyo Imperial University Baseball Matches by Mr Ashida, chief of the Japan Baseball Union, and other addresses

Medical Meetings

The Local Governors Conference was held Oct. 10-11 1930 at the premier's residence and the topics discussed were home made medicines the control of narcotic drugs and extension of leprosariums Home made medicines have resulted from the economic depression Both the premier and the minister of the interior gave instructions that governors should make strict supervision lest opium be illegally sold or imported The extension of leprosariums was favored

The health committee met in the home ministry Nov. 26 1930 and the special committee studied and discussed the drafts of the laws for controlling parasites in farming villages and the laws for controlling the sale and use of birth control drugs and apparatus The documents were sent to the home minister after the conference

The conference of the central hygiene council met Dec. 8 1930 The topics discussed were the act for the prevention of parasitism the act for the enforcement of unitary corporation the amendment in the laws controlling the spread of infectious diseases and the act for the control of distribution of harmful drugs and apparatus for birth control The legislation will be acted on during the present session of the diet

Marriages

EDWARD FRANKEL, JR., New York to Miss MARIAN DINE de Villavilla y Tornes of Greenwich, Conn., January 24

L C COWEN, Rising Sun, Ind., to Mrs. Mittie Griffin of Artesia, Miss., in Miami, Fla., Dec. 9, 1930

JOHN TRIMBLE EADS, Philadelphia to Miss Elizabeth Jane Downs of Newark, N. J., Nov. 30, 1930

SAM LITZBERGER, Anderson Ind. to Miss Frances Louise Turner of Birdsboro, Pa., Nov. 29, 1930

HENRY W. BOPP, Terre Haute, Ind., to Miss Margaret Ruth Hutchens of Seymour, Dec. 26, 1930

HARRY C. BEATTY, North Longwood, N. Y., to Miss Agnes Hall of Calhoun, Ga., Nov. 30, 1930

JAMES W. DAVIS, Statesville, N. C., to Miss Nancy Smith of Greensboro, Dec. 10, 1930

RALPH J. GILMAN, Hartford, Conn. to Miss Ruby Weaver, in Tarrington Dec. 20, 1930

FRANK W. RATCLIFF, Kingman, Ind., to Miss Mary Holt in Chalmers Dec. 20, 1930

HUGH D. STEERS to Mrs. Ethel Morrison, both of Akedo, Ill., January 22

Deaths

John William Draper ☉ New York Medical Department of the University of the City of New York, 1898 member of the American College of Surgeons and the American Gastro-Enterological Association, formerly associate in surgery, Columbia University College of Physicians and Surgeons and associate in experimental surgery University and Bellevue Hospital Medical College director of the surgical research laboratory of the Mayo Clinic, Rochester Minn., 1909-1912, attending surgeon to the State Hospital for Insane, Trenton, N. J., and the Midtown Hospital New York, aged 59 died, January 26 in the Lower Hospital, following an operation on the gallbladder

Edwin Welles Dwight ☉ Boston Harvard University Medical School, Boston, 1891, formerly instructor of legal medicine and surgery at his alma mater, and professor of legal medicine, Tufts College Medical School on the staff of the Boston City Hospital, medical director of the New England Mutual Life Insurance Company, author of "Toxicology" and "Medical Jurisprudence", aged 67, died, January 14

David Harrison Rand, Portland, Ore., Willamette University Medical Department, Salem 1885, member of the Oregon State Medical Society city and county coroner, 1898-1902, for more than forty years on the staff of St. Vincent's Hospital, aged 69, died, Nov. 29, 1930, in San Francisco, of uremia

Willis E. Ford, Utica, N. Y. Medical Department of the University of the City of New York, 1872 member of the American Climatological and Clinical Association for many years on the staff of St. Luke's Hospital, aged 80, died, January 29, of bronchopneumonia and arteriosclerosis

Roy Blosser ☉ Providence, R. I., Atlanta College of Physicians and Surgeons 1902, Jefferson Medical College of Philadelphia, 1906, member of the New England Dermatological Society, served during the World War, aged 48, died, January 8 of illuminating gas poisoning

Thomas Ragan ☉ Shreveport, La., Medical Department of the Tulane University of Louisiana, New Orleans 1891 served during the World War member of the American College of Surgeons, aged 64, died January 9, of cerebral arteriosclerosis and cerebral edema

William Hayes Brosius, Mont Alto, Pa., Jefferson Medical College of Philadelphia 1886 member of the Medical Society of the State of Pennsylvania, aged 70 died Nov. 19, 1930 of chronic parenchymatous nephritis, hypertrophy of the prostate and chronic cystitis

James F. Lemon, Dansville Mich. University of Michigan Medical School Ann Arbor, 1882 formerly member of the state board of health for twenty-five years secretary of the school board, aged 76 died January 5, of diabetes mellitus

Charles D. McGettigan ☉ San Francisco Medical Department of the University of California, 1896 veteran of the

Spanish American War, aged 57, on the staff of St. Mary's Hospital, where he died, January 23, of influenza

Temple J. Smith, Jonesville, La., Maryland Medical College Baltimore, 1903 member of the Louisiana State Medical Society, aged 50, died, January 6, in the Natchez (Miss.) Sanatorium, of pneumonia, following influenza

William David Herring, Midlothian, Texas, Baylor University College of Medicine, Dallas, 1916 member of the State Medical Association of Texas, aged 48, died, January 1 in a sanatorium at Waco, Texas

Samuel McGaughey Indianapolis, Medical College of Indiana, Indianapolis 1900, served during the World War formerly county health commissioner and county coroner, aged 55 died, January 10 of heart disease

Roswell H. Trumpour, Kirtwood, Mo. St. Louis College of Physicians and Surgeons, 1901 member of the Missouri State Medical Association, aged 54, died, Dec. 12, 1930, in Des Peres of pulmonary emphysema

Susan E. Bruce, Lewiston, Idaho, Chicago Homeopathic Medical College 1880 member of the Idaho State Medical Association, formerly member of the state and city boards of health, aged 82, died Dec. 24, 1930

Elisha W. Breazeale, Campit, La., Memphis (Tenn.) Hospital Medical College, 1903 aged 61 died, January 13 in Baton Rouge, of injuries received when the automobile in which he was driving was struck by a train

James A. Miller ☉ McAllen, Texas, American Medical College St. Louis 1901, formerly member of the state board of medical examiners and state legislature in Missouri, aged 69 died Dec. 20, 1930, of pneumonia

George F. Kenney ☉ Milwaukee, Milwaukee Medical College 1906 assistant clinical professor of obstetrics and gynecology Marquette University School of Medicine, aged 46, died January 12, of heart disease

Walter Dancy Minigan ☉ Manchester, N. H., University of Pennsylvania School of Medicine Philadelphia 1920, aged 36 died Dec. 20, 1930, in the Hillsboro County Hospital, Grismere, of cirrhosis of the liver

Walter Fenner Rochelle, Jackson Tenn. Vanderbilt University School of Medicine Nashville, 1882, University of Nashville Medical Department, 1883, aged 73, died, January 9, in Bolivar, of interstitial nephritis

Markley C. Cameron ☉ Pittsburgh University of Pennsylvania School of Medicine, Philadelphia, 1885, aged 69 on the staff of the Western Pennsylvania Hospital, where he died, January 12 of lobar pneumonia

Howard Dysart Kessler, Buffalo, Hahnemann Medical College and Hospital of Philadelphia, 1901 aged 54, died January 10 in the Millard Fillmore Hospital, of coronary occlusion and arteriosclerosis

Abby Dyer Allen, Hamilton, Ohio, Dunham Medical College, Chicago, 1900 Denver College of Physicians and Surgeons 1908 aged 75 died, January 11, in the Fort Hamilton Hospital, of pneumonia

George Washington Lawrence ☉ Litchwood N. J., Yale University School of Medicine New Haven, 1890, on the staff of the Paul Kimball Hospital, aged 61, died, January 16, of cerebral hemorrhage

Stephen A. Foote ☉ Houston Texas, University of Texas School of Medicine, Galveston, 1898, formerly secretary of the Matagorda County Medical Society, aged 60, died, January 7, of coronary thrombosis

Louis H. Davis ☉ St. Louis College of Physicians and Surgeons of St. Louis, 1890, aged 68 died, January 7, in St. John's Hospital of chronic pericarditis with effusion and hypertrophy of the prostate

John M. Jennings, Wamega Kan. State University of Iowa College of Medicine Iowa City, 1872, Civil War veteran, aged 93 died suddenly, January 20, in Warsaw, Ind., of valvular heart disease

Michael Golland, St. Louis Missouri Medical College St. Louis, 1895 member of the Missouri State Medical Association, aged 67 died, January 17, in the Jewish Hospital, of chronic myocarditis

William H. Godwin, Thomas Ala., University of Alabama School of Medicine, Mobile 1909 member of the Medical Association of the State of Alabama, aged 46 died, January 7, of gunshot wounds

George Frederic Wentch Earlville Ill. State University of Iowa College of Homeopathic Medicine Iowa City, 1890,

aged 72, died, Dec 30, 1930, in the East Side Hospital, Waterman, of carcinoma

Edwin Bell Marshall, Annville, Pa (licensed Pennsylvania, 1883), member of the Medical Society of the State of Pennsylvania, aged 76, died, January 6, in a hospital at Lebanon, of uremia

John Moorman Johnson, Rio Hondo, Texas, Louisville (Ky.) Medical College 1894 aged 58, died, Nov 10, 1930 in a hospital at Hurlingen, of cerebral metastasis from an intestinal neoplasm

John Percy Bethel @ Philadelphia, Medico-Chirurgical College of Philadelphia, 1902, served during the World War, formerly city bacteriologist, aged 51, died, January 23, of heart disease

James Winslow Chace, Pittsburgh, University of Buffalo School of Medicine, 1885 formerly member of the school board of Corry, Pa, aged 70, died, Dec. 18, 1930, of cerebral hemorrhage

Edward B Terrell, Atlanta Ga University of Louisville (Ky.) School of Medicine, 1877 aged 73, died, January 12 in the Wesley Memorial Hospital, of heart disease and chronic nephritis

Paul M Donagan, Brookshire Texas, University of Louisville (Ky.) School of Medicine 1889, aged 71, died Dec 27, 1930, in a hospital at Houston, of carcinoma of the urinary bladder

Theodore Clarence Harter, Bloomsburg, Pa, College of Physicians and Surgeons, Baltimore, 1881 formerly member of the state legislature, aged 78, died, in January, of paralysis

Charles Frederick Rinker, Upperville, Va, Bellevue Hospital Medical College, New York 1883, member of the Medical Society of Virginia, aged 71, died Nov 11, 1930 of pneumonia

Harvey Wharton Woods, Blain, Pa, Baltimore University School of Medicine, 1898, Maryland Medical College 1899, aged 59, died, Dec 13 1930, of carcinoma of the throat

Jefferson T Hartly, Liverpool W Va Miami Medical College, Cincinnati, 1882, aged 78, died, Nov 11, 1930, in Clifton Forge, of heart disease and chronic nephritis

John K Ross, Mishawaka, Ind Eclectic Medical Institute, Cincinnati 1881, aged 85, died, January 12, of acute arthritis of the left elbow, following infection of the thumb

Solomon R McKay, Troy, Mo St Louis Medical College 1875, aged 76, died January 5 in St Anthony's Hospital, St Louis, of arteriosclerosis and diabetes mellitus

John Mitchell Gibson @ McIndoe Falls, Vt University of Vermont College of Medicine, Burlington 1888, aged 68, died, Dec 29, 1930, in Berea, Ky, of nephritis

James A Ward, Cordele, Ga, Atlanta Medical College, 1891, member of the Medical Association of Georgia, aged 62, died January 10, of cerebral hemorrhage

William Jackson Smith, Desoto, Ga Kentucky School of Medicine, Louisville 1890, member of the Medical Association of Georgia, aged 65, died, Nov 8 1930

Jose Gomez Brioso @ San Juan P R Central University of Spain Faculty of Medicine, Madrid, 1879 aged 76, died, Oct 17, 1930, of bronchopneumonia

Marcus Henry Heldman, Pasadena Calif University of Nashville Medical Department, 1906, aged 58, died, January 16, of a self-inflicted bullet wound

Alexander Rae, Brooklyn Long Island College Hospital, Brooklyn, 1885, member of the American College of Surgeons aged 70, died, January 5

Hugh Payne Hirst, Leetown W Va Baltimore Medical College, 1895 aged 71 died Dec 20 1930 in Shepherdstown, of cerebral hemorrhage

John B Haines Lima Ohio Fort Wayne (Ind) College of Medicine 1879 aged 78, died January 3 of senile dementia and arteriosclerosis

Tilman Johnson Robb @ North Fork Ky University of Louisville School of Medicine 1908 aged 49 died, January 9, of pneumonia

Henry Lewis Gunn Halifax, Va Medical College of Virginia Richmond, 1899 aged 60, died January 4 of pneumonia

Bernard W Shirey @ York Pa College of Physicians and Surgeons, Baltimore 1895 aged 58 died Dec 5 1930 of peritonitis

Charles J Cragg Detroit Detroit College of Medicine 1900 aged 63 died Dec 3 1930, of carcinoma of the throat

Bureau of Investigation

BRINKLEY'S BROADCASTING STATION

Appellate Court Sustains the Radio Commission

Some time ago, the Federal Radio Commission refused to renew the broadcasting license of Station KFKB of Milford, Kansas, operated by John R Brinkley. The Commission's refusal to renew was based on the ground that the station was operated mainly in the interests of Brinkley rather than in the interests of the public. Following this decision on the part of the Federal Radio Commission Brinkley appealed the case to the courts. On February 2, 1931, the Court of Appeals of the District of Columbia affirmed the Federal Radio Commission's position. The full text of the Appellate Court's decision follows:

In the Court of Appeals of the District of Columbia

KFKB BROADCASTING ASSOCIATION, INC. *Appellant* } No 5240
FEDERAL RADIO COMMISSION }
(Before Martin Chief Justice and Robb and Van Orsdel Associate Justices)

Appeal from a decision of the Federal Radio Commission denying appellant's application for the renewal of its station license

The station is located at Milford, Kansas is operating on a frequency of 1050 kilocycles with 5000 watts power, and is known by the call letters KFKB. The station was first licensed by the Secretary of Commerce on September 20 1923 in the name of the Brinkley-Jones Hospital Association, and intermittently operated until June 3, 1925. On October 23, 1926 it was relicensed to Dr J R Brinkley with the same call letters and continued to be so licensed until November 26 1929, when an assignment was made to appellant corporation.

On March 20 1930 appellant filed its application for renewal of license (*Radio Act of 1927, c 169, 44 Stat 1162 U S C Supp III, Tit 47, Sec 81, et seq*). The Commission finding to find that public interest, convenience or necessity would be served thereby accorded appellant opportunity to be heard. Hearings were had on May 21, 22, and 23, 1930 at which appellant appeared by counsel and introduced evidence on the question whether the granting of the application would be in the public interest, convenience or necessity. Evidence also was introduced in behalf of the Commission. Upon consideration of the evidence and arguments, the Commission found that public interest, convenience, or necessity would not be served by granting the application and, therefore, ordered that it be denied effective June 13, 1930. A stay order was allowed by this Court and appellant has since been operating thereunder.

The evidence tends to show that Dr J R Brinkley established station KFKB, the Brinkley Hospital and the Brinkley Pharmaceutical Association and that these institutions are operated in a common interest. While the record shows that only three of the 1000 shares of the capital stock of appellant are in Dr Brinkley's name and that his wife owns 381 shares it is quite apparent that the Doctor actually dictates and controls the policy of the station. The Brinkley Hospital located at Milford, is advertised over Station KFKB. For this advertising the hospital pays the Station from \$5,000 to \$7,000 per month.

The Brinkley Pharmaceutical Association formed by Dr Brinkley, is composed of druggists who dispense to the public medical preparations prepared according to formulas of Dr Brinkley and known to the public only by numerical designations. Members of the Association pay a fee upon each sale of certain of these preparations. The amount thus received is paid the Station presumably for advertising the preparations. It appears that the income of the Station for the period February, March, and April 1930, was as follows:

Brinkley Pharmaceutical Association	\$5,000.00
Brinkley Hospital	1,000.00
All other source	400.00
Total	\$6,400.00

Dr Brinkley personally broadcasts during three regular periods daily over the station the broadcast being returned to

the "Medical Question Box" and is devoted to diagnosing and prescribing treatment of cases from symptoms given in letters addressed either to Dr Brinkley or to the Station. Patients are not known to the Doctor except by means of their letters, each letter containing a code signature which is used in making answer through the broadcasting station. The Doctor usually advises that the writer of the letter is suffering from a certain ailment and recommends the procurement from one of the members of the Brinkley Pharmaceutical Association, of one or more of Dr Brinkley's prescriptions, designated by numbers. In Dr Brinkley's broadcast for April 1, 1930, presumably representative of all, he prescribed for forty four different patients and in all save ten, he advised the procurement of from one to four of his own prescriptions. We reproduce two as typical.

Here's one from Tillie. She says she had an operation had some trouble 10 years ago. I think the operation was unnecessary and it isn't very good sense to have an ovary removed with the expectation of motherhood resulting therefrom. My advice to you is to use Women's Lonic No 50, 67 and 61. This combination will do for you what you desire if any combination will, after three months persistent use.

Sumflower State from Dr. John Jones. Probably he has gall tone. No I don't mean that I mean kidney stones. My advice to you is to put him on Prescription No 80 and 50 for men and 10. I think that he will be a whole lot better. Also drink a lot of water.

In its "Facts and Grounds for Decision" the Commission held "that the practice of a physician prescribing treatment for a patient whom he has never seen and bases his diagnosis upon what symptoms may be recited by the patient in a letter addressed to him is inimical to the public health and safety, and for that reason is not in the public interest", that "the testimony in this case shows conclusively that the operation of Station KFKB is conducted only in the personal interest of Dr. John R. Brinkley. While it is to be expected that a licensee of a radio broadcasting station will receive some remuneration for serving the public with radio programs, at the same time the interest of the listening public is paramount, and may not be subordinated to the interests of the station licensee."

This being an application for the renewal of a license, the burden is upon the applicant to establish that such renewal would be in the public interest, convenience, or necessity (*Technical Radio Lab v Fed Radio Comm — App D C —, 36 F (2d) 111, 114 Campbell v Galeno Chem Co 281 U S 599 609*) and the court will sustain the findings of fact of the Commission unless manifestly against the evidence" (*Ansley v Fed Radio Comm, No 5149, decided this term, — App D C —, — F (2d) 111*).

We have held that the business of broadcasting, being a species of interstate commerce, is subject to the reasonable regulation of Congress (*Technical Radio Lab v Fed Radio Comm, — App D C — 36 F (2d) 111, City of New York v Fed Radio Comm, — App D C —, 36 F (2d) 115, Chicago Federation of Labor v Fed Radio Comm, — App D C —, 41 F (2d) 422*). It is apparent, we think, that the business is impressed with a public interest and that, because the number of available broadcasting frequencies is limited, the Commission is necessarily called upon to consider the character and quality of the service to be rendered. In considering an application for a renewal of the license, an important consideration is the past conduct of the applicant, for "by their fruits ye shall know them" (*Matt 12:12*). Especially is this true in a case like the present, where the evidence clearly justifies the conclusion that the future conduct of the station will not differ from the past.

In its Second Annual Report (1928), p. 169, the Commission cautioned broadcasters "who consume much of the valuable time allotted to them under their licenses in matters of a distinctly private nature which are not only uninteresting, but also distasteful to the listening public." When Congress provided that the question whether a license should be issued or renewed should be dependent upon a finding of public interest, convenience, or necessity it very evidently had in mind that broadcasting should not be a mere adjunct of a particular business but should be of a public character. Obviously, there is no room in the broadcast band for every business or school of thought.

In the present case while the evidence shows that much of appellant's programs is entertaining and unobjectionable in character, the finding of the Commission that the station "is conducted only in the personal interest of Dr. John R. Brinkley

is not "manifestly against the evidence." We are further of the view that there is substantial evidence in support of the finding of the Commission that the "medical question box" as conducted by Dr Brinkley "is inimical to the public health and safety, and for that reason is not in the public interest."

Appellant contends that the attitude of the Commission amounts to a censorship of the station contrary to the provisions of Sec 29 of the Radio Act of 1927. This contention is without merit. There has been no attempt on the part of the Commission to subject any part of appellant's broadcasting matter to scrutiny prior to its release. In considering the question whether the public interest, convenience, or necessity will be served by a renewal of appellant's license, the Commission has merely exercised its undoubted right to take note of appellant's past conduct, which is not censorship.

As already indicated Congress has imposed upon the Commission the administrative function of determining whether or not a station license should be renewed, and the Commission in the present case has in the exercise of judgment and discretion ruled against the applicant. We are asked upon the record and evidence before the Commission to substitute our judgment and discretion for that of the Commission. While Sec 16 of the Radio Act of 1927 (*44 Stat 1162 1169, U S C, Supp III, 1st 47 sec 96*) authorized in appeal to this Court, we do not think it was the intent of Congress we should disturb the action of the Commission in a case like the present. Support is found for this view in the Act of July 1, 1930 (*46 Stat 844*), amending Sec 16 of the 1927 Act. The amendment specifically provides that the review by the court shall be limited to questions of law and that findings of fact by the commission, if supported by substantial evidence, shall be conclusive unless it shall clearly appear that the findings of the commission are arbitrary or capricious. As to the interpretation that should be placed upon such provision see *Ma-King v Blair*, 271 U S 479, 483.

We are therefore constrained, upon a careful review of the record to affirm, the decision.

Affirmed

CHAS H ROBB, Associate Justice

EXHIBIT No 5240 KFKB Broadcasting Association Inc, Appellant v Federal Radio Commission Appellee. Opinion of the Court per Mr Justice Robb. Court of Appeals District of Columbia. Filed February 2 1931. Henry W Hodges Clerk.

Correspondence

NATIONAL ADJUSTING ASSOCIATION

To the Editor —In the fall of 1928, a representative of the National Adjusting Association, 208 West Washington Street, Chicago, called on me, and by the most unscrupulous canvass ever inflicted on me induced me to give him a list of slow accounts amounting to \$6,000. I was to have monthly reports and checks with each. To my surprise, they got money from most unexpected sources—but the last check I received was May 9, 1929. I have persistently demanded an accounting from time to time, since, without effect. They dodge the issue by some demand or proposal which is necessary before they can act, and so they dangle along, evading a report.

I have written the Department of Law Enforcement in Boise to see if these people are legally qualified since 1928 to operate in this state, and I believe it would be well to give this matter a little publicity through THE JOURNAL. I am convinced the medical profession would much rather allow their earnings to remain in the hands of their clientele—even though that clientele neglects its duty—than to turn it into less worthy channels.

C F MAGEE, M D, Moscow, Idaho

[COMMENT—The National Adjusting Association was one of the organizations that was given some publicity in the Bureau of Investigation department of THE JOURNAL, June 10 1922. Since that time we have had many additional complaints regarding the concerns methods, some of which have been only partially justified, while others seem to have been well justified. The company so far as we know, keeps within the terms of

its contract, but the contract itself is an inequitable one that seems to be made almost wholly in the interests of the collection agency, rather than equally in the interests of the agency and its client. While Dr. Magee understood that he was to have monthly reports and remittances from the collection agency, the National Adjusting Association's contracts that we have seen says nothing about such monthly reports. It does say that the physician must immediately report to the collection agency and send its share of payments made directly to the physician. But there is nothing in the contract requiring the agency itself to write to the doctor until it gets ready.—ED.]

ROBISON NATIONAL CLEARING AND WORLD WIDE ADJUSTING COMPANIES

To the Editor—I was interested in your article on the Robison National Clearing Company of Albany, N. Y. I have had a little experience with this company and believe that you should know about these things. In February, 1930, a representative of the World Wide Adjusting Company (a subsidiary of the Robison National Clearing Company) called at my office and asked that I give him some of my bad accounts, stating that his company was going to compile a book of Lagrange County, listing all "dead beats" whom they owed, etc. He stated that every one who turned over any accounts to him would secure one of these books. He canvassed business houses in town telling the same story. He had a booklet, which he showed me on another county, similar, he said, to the one to be prepared on Lagrange County.

Being new and unacquainted in this community, I gave him a few bad accounts, because I felt that this proposed booklet might be of some use to me. Two of the claims I turned over were not to be pressed until further word from me. A few weeks later I received a notice from this company, stating they were pressing my claims, including these two. I wrote telling of the understanding with their representative and received their reply of April 4. On August 1, I wrote asking about the listing book and received their reply of August 7.

I have no particular grievance with them. They have done me neither good nor harm, but I thought you might be interested in knowing these things. You will note that while the address is the same, the name is different from the company on which you published. FRANK J. KENDRICK, M.D., Lagrange, Ind.

[EDITORIAL COMMENT—Dr. Kendrick enclosed with his communication some letters received from the World Wide Adjusting Company (which also seems to go under the name of World Wide Adjusting Association, Inc.) With reference to the two claims that the doctor had stated should not be pushed the company agreed to discontinue further action on them. As to the complaint of Dr. Kendrick, that the listing book had not been received. The company wrote that it published no such book, that it was in the collection business only and expressed the opinion that its representative might be "carrying such a proposition as a side line." A later letter from the company, following the doctor's further protest, brought the statement that they were checking up the matter with their representative and in the meantime, would withhold further service on the doctor's claims. The company also stated in this letter that it was a subsidiary of the Robison National Clearing Company of the same address. Finally, in a letter dated December 16 the World Wide Adjusting Company wrote in effect that the investigation had shown that their agent had made representations that were unjustified and for that reason the company was closing its files and making no further attempt to collect the doctor's accounts. The information was added that the company's representative in this case was one R. E. House and not the man Rosenkrans whose methods were discussed in THE JOURNAL's article on the Robison National Clearing Company.]

To the Editor—I have had an experience with the Robison National Clearing Company of Albany, N. Y. very similar to that of Dr. L. O. Price of Ladoga, Ind. Last March a Mr. P. T. Rosenkrans representing the above named company called

on me and represented that they were getting up a credit book and wanted a list of my delinquent accounts, offering to collect them for 50 per cent of the first \$100 collected and 15 per cent of all after the first hundred. He said that I did not have to sign any contract and that I would receive a credit book in due time with a rating of people in Tippecanoe and adjoining counties. I did not sign any contract. In a few days I received two lists from the company at Albany, asking me to look them over, correct any errors, sign one and return the other.

I sent them a telegram telling them the list was not correct and not to proceed with any collections. It seems that they sent their first notice to my accounts at the same time they mailed me the lists. A few people came to my office and paid me and I sent the commission agreed with Mr. Rosenkrans, telling them I was sending the commission because they had apparently sent the notice before they received my telegram.

They have failed to send me any money they have collected. Have been very offensive to my patients, threatening suits and attachments on their furniture, autos, etc. I have repeatedly ordered them to stop but they have refused, saying I had signed a contract assigning the accounts to them. They finally sent to Battle Ground State Bank what they said was a contract signed by me. This was a rank forgery, as the president and other officers of the bank are willing to testify to. They still refuse to send me any money they have collected. They are still threatening some of my patients with suits.

FRANK M. BIDDLE, M.D., Battle Ground, Ind.

To the Editor—I have read with interest the article on the experience of an Indiana physician with the Robison National Clearing Company, Inc. appearing in the Bureau of Investigation Department of THE JOURNAL, December 13. About four or five years ago, in a weak moment, I contracted with them to collect around a thousand odd dollars' worth of accounts. To date, in spite of repeated attempts, I have been unable to collect one single cent from them, although, on their own admission, they have made several collections. I have had a somewhat similar experience with the United States National Adjustment Company of Chicago.

H. F. W. WARREN, M.D., Detroit

ADENOCARCINOMA OF THE HEAD OF THE PANCREAS

To the Editor—I have read with great interest the article by Dr. Elmer Hess on this subject in THE JOURNAL, January 3. Dr. Hess is to be commended for calling attention to the difficulties of diagnosis of lesions in the region of the head of the pancreas.

I wish to call attention to several diagnostic aids which have been found useful in a consideration of these lesions. The duodenum has approximately the same shape as that of a horse shoe magnet, the pyloric end of the stomach forming the bar between the poles of the magnet. A tumor mass within the loop tends to expand the latter, often to such an extent that the horse shoe becomes a circle. Clarence Bird has emphasized the value of repeated series of roentgenograms over a period of time. Any expansion is suggestive of a growing tumor mass within the duodenal loop. This expansion can be conveniently detected by a suitable technique measuring vertical and horizontal measurements on the roentgenogram. Contour tracings can also be made and compared.

Carcinoma of the pancreas may invade the duodenum. In the early stages of the process the filling defects so produced are evanescent and difficult to detect. Roentgenograms therefore are quite essential to supplement the radioscopic observation.

JOHN R. CARTY, M.D., New York

Chief of Clinic, Department of X-ray
Cornell University Medical College

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted on request.

INDICATIONS FOR AND TECHNIC OF CISTERNAL PUNCTURE

To the Editor—Please describe the technic of doing a cisternal puncture in order to obtain a specimen of cerebrospinal fluid. Is there any danger of performing routine cisternal punctures instead of lumbar spinal punctures? Please omit name and address. M D North Dakota

ANSWER—The technic of doing a cisternal puncture is adequately described in Ayer's article in the *Archives of Neurology and Psychiatry* 4:529 (Nov.) 1920. In brief, the hair of the back of the neck is shaved to the external occipital protuberance. The area in the midline from this point to the second cervical spine is painted with iodine. The patient is in a position so that his head is on a straight line with his cervical spine. The neck is flexed anteriorly about 20 degrees. The thumb of the left hand palpates and finds the midline in the area between the external occipital protuberance and the spine of the second vertebra. The needle is inserted inward at an angle so that it points in a line between the external auditory meatus and the glabella. The needle should never be inserted more than 6 cm. It passes through the subcutaneous tissue and the musculature, and strikes the firm resistant occipito-atlantoid ligament. It takes considerable pressure to pass through this portion of the dura and care must be exerted that the needle is not pushed too far anteriorly by the force that is required to penetrate the dura. Difficulties in obtaining fluid are usually due to being outside the midline or not directing the needle in the proper direction. Anomalous veins sometimes give rise to bleeding and when this occurs no further puncture should be done in the cisternal region. Routine cisternal puncture should not be done instead of lumbar punctures as there is some danger to the former and certain deaths have been described actually due to the puncture, whereas lumbar spinal punctures are entirely free from danger when contraindications to withdrawal of fluid do not exist.

TREATMENT OF SYPHILIS—ADVICE TO SYPHILITIC PATIENT CONCERNING MARRIAGE—LAWS REGULATING MARRIAGE

To the Editor—I have a patient whose diagnosis was primary syphilis (chancre) diagnosed by clinical observations and by the dark field. He received six intravenous injections of neovarsphenamine and nine intramuscular injections of bismuth. If his Wassermann reaction should be negative would you repeat the same course of treatment for two years? The Army Manual directs the giving of mercurial treatment only if the first Wassermann reaction is negative and a return to the intravenous treatment if the Wassermann reaction is positive. 1. Do many other authorities agree with directions given in this manual on venereal diseases? 2. How long would you have the patient wait after the primary lesions have healed up to get married? 3. What states in the Union require a medical examination before obtaining a marriage license? What states require this examination only from the man and what states require the same examination of both sexes?

WILLIAM FRANKMAN M.D. Boston

ANSWER—1 and 2. The directions given by the Army Manual are derived from teachings of prominent syphilologists and may therefore be considered authoritative. It is the consensus that an individual has to be free from all syphilitic symptoms for at least one year before marriage should be contemplated. The patient must not only be free from all symptoms to be discovered by clinical examinations but also be tested by serologic examinations which includes the testing of the spinal fluid.

3. No American state requires a prospective bride to furnish a medical certificate showing that she has been examined and found free from venereal disease. Seven states require such examinations and certificates from prospective bridegrooms, namely Alabama, Louisiana, North Carolina, North Dakota, Oregon, Wisconsin and Wyoming.

The marriage of a person who has a contagious venereal disease is forbidden in Delaware, Indiana, Maine, Michigan, Nebraska, New Jersey, Oklahoma, Pennsylvania, Utah, Vermont, Virginia and Washington. We are not informed however as to the method of enforcing compliance with the several statutes of the states named except that the laws of Pennsylvania

require an application for a marriage license to contain a statement showing that neither party has a transmissible disease.

In New Jersey, it is unlawful for any person who has been confined in any public asylum or institution as an epileptic, insane or feeble-minded person to intermarry without a certificate from two regularly licensed physicians of New Jersey, that such person has been completely cured of such insanity, epilepsy or feeble-mindedness and that there is no probability that such person will transmit any such defect or disability to the issue of such marriage.

The marriage of epileptic persons is forbidden in Delaware, Indiana, Kansas, Minnesota, Missouri, North Dakota, Ohio, Utah, Virginia and Washington. We are not informed as to the method of insuring compliance with these statutes.

The laws of Pennsylvania require that an application for a marriage license contain a statement showing that neither party has a transmissible disease. This seems to be broad enough to cover venereal diseases in their communicable stages, hemophilia, and transmissible disorders of the nervous system.

OBSTETRIC DEATHS IN AND OUT OF HOSPITAL

To the Editor—In a recent discussion with physicians from rural communities there was a difference of opinion as to the percentage of deaths in obstetric cases in and outside of hospitals. For my own information and to settle the argument I should like figures concerning the death rate in these cases both in hospitals and out of hospitals. Also an opinion as to why the difference in death rate in such cases.

REV. LEWIS D. HOPPER, Peoria, Ill.

ANSWER—There is little direct evidence in the literature bearing on the question of the percentage of deaths in obstetric cases in and outside of hospitals. There are no figures that pertain to the country as a whole. This question was taken under consideration by a subcommittee of Section I of the White House Conference on Child Health and Protection which recently met in Washington, D. C., and the report of the subcommittee stated that: "There is not much available material on this subject as bureaus of vital statistics do not usually classify maternal deaths according to the place of delivery. Figures secured from California for 1929, however, show that the rate was practically the same for hospital and home deliveries. This is a very good showing for the hospitals in view of the fact that they receive a large proportion of complicated and difficult cases."

An article published in *THE JOURNAL* Nov. 9, 1929, by Holmes, Munsey and Adair included a study of maternal deaths made by the Minneapolis Infant Welfare Society following home and hospital deliveries during the years 1925 to 1928 inclusive. There was a total of 35,583 living births during the period studied of which 24.2 per cent took place in homes and among these the death rate per thousand was 3.4. Of the total number of living births, 75.8 per cent took place in hospitals and among these the maternal death rate per thousand was 3.9.

Frankel in a pamphlet published in 1927 by the Metropolitan Life Insurance Company on *The Present Status of Maternal and Infant Hygiene in the United States*, said that some five years ago Dr. Julius Levy made a study of maternal mortality among cases attended in the homes by midwives and compared them with all the cases attended in Newark, N. J., during the period 1916 to 1921. On cases ever handled by a midwife, there occurred 15 maternal deaths per thousand births and for the whole city, including the midwife cases, the rate was 4.3 per thousand births. Frankel said it is interesting to inquire whether this favorable record was due to attendance of midwives or to the fact that the deliveries took place in the home, and presumably without undue meddling or tampering.

BREEDING OF MOSQUITOES

To the Editor—1. Do not the majority of mosquitoes that infest the seacoast breed in salt water or brackish water caused by the tides and swamps? 2. Is it possible that the anopheles may breed in brackish water? 3. What species of mosquitoes breed in salt water and in brackish water? Kindly omit my name. M D South Carolina

ANSWER—1. The percentage of species of mosquitoes that breed in brackish water along the seacoast varies greatly in different parts of the world. In many places, however, a large proportion of the mosquitoes along the coast breed in brackish water. An example of this is found in the salt marsh mosquitoes of New Jersey.

2. A number of anophelines breed in brackish and a few in sea water. In the United States according to Griffiths,

Anopheles crucians will breed in 50 per cent sea water and *A. quadrimaculatus* in 15 per cent sea water. In parts of Porto Rico tidal swamps are of great importance in the breeding of *A. albimanus* and in the control of malaria.

3 It is impossible to list all of the known salt-water breeders. In the United States, besides the anophelines listed in 2, the best known are *Aedes sollicitans*, *A. taeniorhynchus* and *A. cantator*. The whole question of the effect of salinity on mosquito breeding is attracting considerable attention and future work will probably uncover a number of instances in which species thought to breed only in fresh water will be found to breed also in brackish water.

STAPHYLOCOCCI IN BLOOD CULTURES

To the Editor—What are the clinical conditions that would tend to be confirmed by the isolation of staphylococci in hemoculture? If staphylococci are found on hemoculture is a person justified in regarding them as contaminants due to faulty technique unless there is some clinically recognizable localized septic process? Please omit name.

MD Idaho

ANSWER—The mere demonstration of the presence of staphylococci in a blood culture without determination of the virulence of such organisms is of little value. There is no sure way of differentiating staphylococci that may be contaminations from the skin from those that invade the blood stream in septic infections, other than the virulence test in suitable animals. Intravenous injection into rabbits is perhaps the best method of determining virulence or specific invasive power of staphylococci which may appear in blood cultures.

TREATMENT OF CONGENITAL SYPHILIS

To the Editor—A girl aged 6 years with congenital syphilis first came to me for treatment at the age of 5. She had had in early infancy a brief course of antisyphilitic therapy at which time she had a chronic suppurative cervical lymphadenitis. The physician who treated the lymphadenitis stated that the cervical glands were probably syphilitic as they had discharged for a long time and healed only after antisyphilitic therapy had been instituted. I do not know how much treatment she had in infancy but she had had no treatment for several years previous to coming to me. Physical examination was negative except for malnutrition (weight 35 pounds or 16 Kg.) hypertrophied infected tonsils and adenoids but no other stigmas of syphilis. The child seemed normal mentally and a neurologic examination was negative. The blood Wassermann reaction was 4 plus and has remained so since. I have given the following treatment over a period of fifteen months:

8-1-29—9-31-29	Sulpharsphenamine in transmuscularly 5 injections 12 Gm	1 per cent mercuric chloride intramuscularly 5 injections 0.5 cc
10-8-29—1-4-30	Sulpharsphenamine 4 injections 0.2 Gm	Mercuric salicylate 12 injections 3-100 1/10 grain
2-15-30—5-10-30	6 injections 0.2 Gm	12 injections 4-100 grain
7-12-30—8-9-30	5 injections 0.2 Gm	5 injections 4-100 grain
9-13-30—11-15-30	10 injections 0.2 Gm	10 injections 4-100 grain

The total treatment over a period of fifteen months was sulpharsphenamine thirty injections 0.2 Gm each 1 per cent mercuric chloride five injections 0.5 cc each mercuric salicylate thirty nine injections 3-100 1/10 grain each. The child has remained well except for minor cold and chickenpox and seems normal except for failure to gain (her weight now is only 36 pounds or 16.3 Kg.) which I ascribe as much to the infected tonsils and adenoids as to the syphilis. Is the treatment I have described adequate or inadequate? In another month I plan to start the patient on a course of ten weekly injections of sulpharsphenamine 0.3 Gm each followed immediately by ten weekly injections of bismuth subsalicylate, 0.4 Gm each then a vacation of one or two months followed by a repetition of this course and so on. Does such a program alternating mercury sulpharsphenamine and bismuth appear to you to be adequate? What do you think of the use of potassium iodide? I feel that it is indicated but do not know when how often or how much to use. It seems to me that the chances of getting the patient Wassermann negative after so long a period of neglect are not especially good. If after another year of treatment the Wassermann reaction is still positive how should I proceed? If the Wassermann remains positive but the child remains well how am I to judge as to the adequacy of my treatment? In such a case must treatment be continued indefinitely at (a) short intervals or (b) at long intervals? Please omit name.

MD Ohio

ANSWER—The main facts in this child's case are these: The first evidence of her syphilitic infection took the form of a Vignolo-Luttray syndrome which always raises the question of intercurrent tuberculosis as well as gummatous syphilis. She shows definite evidence that she is carrying the handicap of a chronic intercurrent infection in the form of the hypertrophied

infected tonsils and adenoids. She has a strongly positive blood Wassermann reaction that has resisted quite energetic treatment. She is still within the interstitial keratitis period in the life history of a prenatal syphilitic infection, and the possibility of this complication whether with or without treatment, must be constantly kept in mind. While she is normal to neurologic examination asymptomatic neurosyphilis can occur and not infrequently does in prenatally infected children, and for that reason a spinal fluid examination is a necessary part of any investigation for the explanation of the persistent positive blood Wassermann reaction. It is suggested, therefore, that since the amount of treatment already received is probably sufficient to protect against any gummatous accident the handicap of the infected hypertrophied tonsils and adenoids be removed at the earliest possible date. This will in all probability favorably influence the child's nutrition and general state of health. It seems essential, also, to have a spinal fluid examination at some time in the not too distant future and this might conceivably be done during the general anesthesia employed for the removal of the tonsils, though the possibility of stirring up a focal infection and transferring what might be a shower of organisms in the blood stream to the meninges makes it, perhaps rather more desirable to do the lumbar puncture as an entirely separate procedure.

With regard to the continuance of treatment, there is probably no further need for mercury for it has been quite clearly shown that bismuth compounds and an arspenamine are all that is needed for the effective management of latent prenatal syphilis. It seems possible that the blood Wassermann reaction will not reverse in this case under any form of treatment and such reversal should not be made so much of an object that the child is kept under too prolonged or too intensive a regimen. Another year of alternating sulpharsphenamine and bismuth would justify a rest period of several years while the child is kept under observation all this provided the spinal fluid examination is completely negative to all four of the conventional tests. The adequacy of treatment in such a case must be gauged by general constitutional response even more than by serologic reaction. It must be remembered too that it has not yet been clearly shown that even the most energetic modern treatment is able absolutely to insure against the onset, in the coming years of this child's life, of a severe attack of interstitial keratitis. It is essential, therefore, to hold a certain amount of treatment tolerance in reserve to deal with such a situation in case it arises. There are, of course, objections to the use of sulpharsphenamine particularly the tendency markedly greater than that of other arspenamines to induce exfoliative dermatitis. Bismuth arspenamine sulphurate or bismuth alone will give quite satisfactory results with less risk on this score. Potassium iodide is always indicated in prenatal syphilitic infection the dose being moderate from 0.65 to 1.3 Gm (10 to 20 grains) three times a day, given preferably during rest periods from other treatment.

MILD MERCUROUS CHLORIDE SUSPENDED IN LIQUID

To the Editor—After examining patient and making a diagnosis I prescribed

	Gm or Cc
R Tincture of belladonna	1
Calomel (O.K. to fill)	2
Sodium bicarbonate	12
Aromatic fluidglycerate of cherry sagrada	12
sufficient to make 120	

M Sig. Ten spoonful every three hours in water

In an hour I received a phone call from the local druggist in reference to the dose of calomel. I advised him that the dose was what I wrote and thought was indicated in this case—in fact, even labeled for crying in so that effect in order to relieve him of any responsibility. However, he insisted that 1 grain was an overdose for every three hours (practically 5 grains per diem) and would not fill it. So I advised him to return the prescription to the patient that he might have it filled somewhere else. It was filled by another pharmacist without question. The patient was continued for two days. The patient is entirely well and content. I would like to know what is wrong with a dose of 1 grain of calomel when U.S.P. Cathartic pills contain 1 grain and can be bought anywhere and used at random.

M. K. M.D. Chicago

ANSWER—Prescribing such a heavy in soluble substance as mild mercurous chloride in liquid dosage form is unadvisable because of necessary inequality of dosage. Even if the mixture is shaken each time before taking the mild mercurous chloride will settle so rapidly that the last doses will contain much more of it than the first. Nevertheless even if the 2 Gm contained in the mixture were taken at one time the patient having refrained from shaking the bottle no dire result could have followed unless an intestinal obstruction was present. In such a case mercurial poisoning might have resulted. The pharmacist was within his legal right in refusing to fill a prescription that

he considered potentially dangerous, for, in spite of the physician's insistence that the dosage was intended, the pharmacist would have been held legally responsible with the physician in case harm resulted from the medicine. The pharmacist who filled the prescription took a risk, even though a slight one.

TREATMENT OF ECZEMA OF EXTERNAL EAR

To the Editor—Kindly inform me regarding the treatment of chronic eczema of the external ear canal. The patient's present ailment is of one and one-half years duration, and it is very annoying because of severe itching, and pruritus at times. Would quartz light treatments benefit this condition? His tonsils seem to be infected. Would tonsillectomy be necessary besides the usual local treatments? Please omit name and address.

M D New Jersey

ANSWER—Before making local applications to the ear canal, it should be cleansed with a swab dipped in oil or liquid petrolatum. Then, once or twice a day, the following should be applied:

	Gm	or	Cc
Rectified oil of birch tar N F	1.0		gr xxx
Resorcinol	0.8		gr xiii
Liquid petrolatum	to make	16.0	ss

This should relieve the itching and gradually clear up the chronic inflammation.

Ultraviolet radiation is difficult to apply in the ear canal. X-rays, one-half skin unit filtered through 1 mm of aluminum, can be given once a week and are often successful in relieving the itching and causing resolution of the condition. They should be given through an opening in a sheet lead mask, so that only the skin immediately around the opening of the canal is exposed, and should not be continued after relief is obtained, nor after eight treatments as outlined have been given.

The tonsils would have only an indirect influence on this eczema, through their effect on the general health.

USE OF METHENAMINE AND SODIUM ACID PHOSPHATE

To the Editor—Many of the drug concerns market a tablet consisting of methenamine and sodium acid phosphate in varying amounts. They state that the drug should be taken in water. Useful Drugs states that the two should not be prescribed in solution. The coming of methenamine and sodium acid phosphate in tablet form makes the medication easier for the patient but because of the foregoing statement I should like to know whether this combination taken in solution is proper. Please omit name and address.

M D New York

ANSWER—There is really no serious incompatibility if methenamine and sodium acid phosphate are prescribed in a relatively fresh solution. Prescribing them separately in tablet form is, on the whole, still better. According to Useful Drugs, the acid phosphate should preferably be given long enough in advance of the methenamine so that it will have left the stomach before the latter is administered. Sodium acid phosphate should be administered preferably as a separate prescription, until the urine is acid. If the urine is unacidified, there is no need of constant dosing with sodium acid phosphate while the methenamine is being taken.

OSTELIN—PROGNOSIS IN PAGET'S DISEASE

To the Editor—What is the prognosis and treatment for Paget's disease of the bones? Is the ultraviolet ray of use? In London they use a remedy called Ostelin which they think of value. Can you tell me where it can be obtained? Please omit name and address.

M D Maine

ANSWER—Ostelin is marketed in Great Britain as a cod liver oil concentrate. A reference to Ostelin appears in the *Lancet*, Sept 3, 1927, page 508. No examination of Ostelin has been made by the Council on Pharmacy and Chemistry. The following cod liver oil concentrates have been accepted by the Council: Ocodol White's Cod Liver Oil Concentrate, and McKesson's Vitamin Concentrate of Cod Liver Oil.

The prognosis in Paget's disease is very poor. The treatment for Paget's disease is unknown. Ultraviolet rays may be of benefit in reducing the rheumatic symptoms and maintaining tonicity of the muscles.

DANGERS OF GUAIASODIDE INTRAVENOUSLY

To the Editor—Two weeks ago for five days I gave a patient who had bronchial asthma one 20 cc ampule daily of Guaiasodide (Breon) which contains sodium iodide 32 Gm, guaiacol 0.625 Gm, creosote 0.625 Gm, and dextrose 5 Gm. A week ago the patient developed a phlebitis in both arms which has continued to become worse. Was the solution irritating to the veins and did this account for the phlebitis?

JAMES ANDREW M D Cordova Ala

ANSWER—Evidently

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALASKA Juneau, March 5, 1931 Sec, Dr Harry C. De Light, Juneau Alaska
AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Written examination in nineteen cities in the United States and Canada March 14-15 Sec, Dr Paul Litus 1015 Highland Bldg Pittsburgh Pa
CALIFORNIA Reciprocity San Francisco and Los Angeles March 19, 1931 Sec Dr C B Pinkham 420 State Office Bldg Sacramento Cal
CONNECTICUT Homeopathic New Haven March 10, 1931 Sec, Dr C M Hall 82 Grand Ave, New Haven, Conn.
NEW HAMPSHIRE Concord, March 12-13, 1931 Sec Dr Charles Duncanson, Concord N H
OKLAHOMA Oklahoma City, March 10-11, 1931 Sec, Dr J M Bryn Shawnee, Okla
PORTO RICO San Juan March 3, 1931 Sec Dr Diego Basore Box 804 San Juan 1 R
WISCONSIN Madison March 21, 1931 Basic Science, Sec, Dr R N Bauer 3414 W Wisconsin Ave Milwaukee Wis

New Hampshire September Examination

Dr Charles Duncanson, secretary of the State Medical Board New Hampshire, reports the oral, written and practical examination held at Concord, Sept 11-12, 1930. The examination covered 9 subjects and included 90 questions. An average 75 per cent was required to pass. One candidate was examined and passed. The following college was represented:

College	PASSED	Year Grad	Reciprocity
Harvard University Medical School		(1925)	81

Dr Duncanson also reports 12 physicians licensed through reciprocity with other states and 2 by the endorsement of credentials at the same meeting. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad	Reciprocity
State University of Iowa College of Medicine		(1923)	16
Medical School of Maine		(1891)	Ma
Boston University School of Medicine		(1890)	Arkan
Tufts College Medical School		(1929-2)	Ma
Belleuve Hospital Medical College		(1892)	New Y
University of Pennsylvania School of Medicine		(1929)	Verm
University of Vermont College of Medicine		(1929-4)	Verm
Medical College of Virginia		(1916)	Virgi

College	ENDORSEMENT OF CREDENTIALS	Year Grad	Endorsement
Harvard University Medical School		(1927)	(1929) N B W

Washington July Examination

Mr Charles Maybury, director of the Department of Licenses of Washington, reports the written examination held at Seattle July 14, 1930. The examination covered 8 subjects and included 80 questions. An average of 60 per cent in each subject was required to pass. Twenty-five candidates were examined and passed. The following colleges were represented:

College	PASSED	Year Grad	Reciprocity
Northwestern University Medical School		(1928)	75
Rush Medical College	(1923) 80	(1927) 75	(1930) 79
University of Illinois College of Medicine		(1908)	68
St Louis University School of Medicine		(1929)	16
Washington University School of Medicine		(1929)	73
University of Nebraska College of Med	(1929) 73	76	(1930) 75
University of Oregon Medical School		(1929)	75
Marquette University School of Medicine		(1929)	76
McGill University Faculty of Medicine	(1920) 80	(1924)	71
University of Manitoba Faculty of Med	(1926) 77	(1929)	80
Charles University Faculty of Medicine Prague		(1928)	75
Lieutnant of the Royal College of P and S Scotland		(1893)	66

Mr Maybury also reports 24 physicians licensed through reciprocity with other states and 4 by the endorsement of credentials at the same meeting. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad	Reciprocity
College of Medical Evangelists		(1920)	Californ
Northwestern University Medical School		(1912)	Wiscons
Missouri		(1914)	
Rush Medical College	(1920) Montana	(1928)	(1929) Californ
State University of Iowa College of Medicine		(1929)	Ion
Tulane University of Louisiana School of Medicine		(1928)	Louisian
(1912) (1925) (1927) Michigan			
Univ of Minnesota Med Sch	(1902) (1926) (1927) (1929)		Minne
(1912) (1925) (1926) Michigan			

University of Minnesota Med Sch (1902) (1926) (1927) (1929) Minnesota
 Louis University School of Medicine (1924) Missouri
 University of Nebraska College of Medicine (1927) (1929) Nebraska
 University of Oregon Medical School (1929 2) Oregon
 Jefferson Medical College (1923) Pennsylvania (1925) Minnesota

College	ENDORSEMENT OF CREDENTIALS	Year	Endorsement
		Grad	of
Harvard University Medical School		(1926)	N B M Ex
University of Oregon Medical School		(1928 2)	N B M Ex
University of Pennsylvania School of Medicine		(1927)	N B M Ex

Book Notices

APHASIA IN CHILDREN. By Alex W G Ewing M A Ph D With an introduction by E D Adrian M D FRCP FRS Cloth Price 3 50 Pp 152 New York Oxford University Press 1930

Ewing states that in the speech and language development of the normal child the essential processes are first hearing and then learning to understand and to imitate the spoken word. In the absence of hearing, neither understanding of words, speech, reading nor writing develop naturally. The author emphasizes the importance of testing the hearing of all children suspected of aphasia. He reviews in detail the various hearing tests, including the Rinne (tuning fork test of air and bone conduction), watch test, whispered speech, phonograph audiometer, tonoscope and sensitive flame and the audiometer. The last mentioned instrument is a model 2 A Western Electric Company audiometer and is used in the course of the author's investigations. The audiometer as a means of testing hearing is found to give quantitative measurements of a range and accuracy unobtainable with any other known form of apparatus and it has made known the existence of hearing in children who had been considered totally deaf to sound. The author discovered that among individuals whose hearing is apparently normal, differences in auditory acuity may occur all over the tonal range. Furthermore, the sense of hearing is not the same in any two individuals. He made the important discovery that a hearing defect occurred which he termed high-frequency deafness. Five boys and one girl were found to suffer from this hearing defect. The symptoms of the high-frequency deaf children such as variable reaction to noises, noncomprehension of speech and mutism were due to their subnormal acuity to the usual speech frequencies. Ewing employed special methods of training and education in these patients and was able to produce considerable improvement in hearing and in the ability to acquire new and difficult words by ear alone. The second half of the volume is devoted to an extensive review of the literature of aphasia. The author finds that in proportion to the abundant literature devoted to adults the special treatment of the condition in childhood is relatively small and consists for the most part of a description of word blindness or 'visual aphasia'. As a result of investigations on 100 individuals the author further determined the minimum hearing essential to normal speech and language development in terms of his audiometer readings. Ewing has carried out an important investigation on the study of deafness and aphasia in children and his contribution on high frequency deafness is of the utmost importance. It should be studied in aphasic children as well as those who present symptoms of defective or retarded hearing.

LE DIAGNOSTIC DES ANGINES AIGUES. Par A B Marfan professeur honoraire à la Faculté de médecine de Paris. Paper. Price 10 francs. Pp 92. Paris Masson & Cie 1929.

The purpose of this concise volume on acute sore throat is expressed by the author in his introduction. It is his intention to show first that it is possible by a purely clinical examination to establish enough of a diagnosis to determine whether the case demands antidiphtheria serum and secondly, to make revision in the description and clinical classification of sore throats. As he states the accurate and immediate clinical differentiation is of the greatest importance to the welfare of the patient. It has been the author's experience in diphtheria that when the clinical and bacteriologic diagnosis are based on exact observation there is little discord. There are exceptions in which either a clinical or a bacteriologic examination may be in error, but usually a clinical examination will afford suffi-

cient basis for the diagnosis and, if the case is one of diphtheria, many valuable hours may be saved. For convenience in discussion, he divides the acute sore throats into those in which one does not see a white coating—the red sore throats—and the cases in which there is a more or less extensive membrane—the white sore throats. These two artificial groups are then considered in detail and the various clinical conditions are presented with especial attention to the diagnostic features of each. After a short section on bacteriology, in which it is not his purpose to enter into a full discussion, the author states briefly the conclusions which he thinks are warranted by the preceding exposition. When a pseudomembranous sore throat is primary and does not follow scarlet fever, tonsillitis, syphilis or some other infection it should be considered as diphtheritic and serum should be given at once without delay for bacteriologic examination. When such a pseudomembrane follows another recognized infection, one is justified in regarding diphtheria as improbable, but an immediate bacteriologic examination should be made, as diphtheria does coexist with the other infections. Moreover if an epidemic of diphtheria is present or if there is a laryngitis or a coryza with red nostrils and serous or serosanguineous discharge serum should be given without waiting for bacteriologic results. In any doubtful case that cannot be determined bacteriologically, serum should be used and it should be used in any case in which temporizing might be detrimental to the welfare of the patient, without awaiting bacteriologic observations. The volume has many practical clinical suggestions and is of value and interest.

A PRIMER FOR DIABETIC PATIENTS. A BRIEF OUTLINE OF THE TREATMENT OF DIABETES WITH DIET AND INSULIN. INCLUDING DIRECTIONS AND CHARTS FOR THE USE OF PHYSICIANS IN PLANNING DIET PRESCRIPTIONS. By Russell M Wilder M D Professor and Chairman of the Department of Medicine University of Chicago Clinics. Fourth edition. Cloth Price \$1 50 Pp 138 with 4 illustrations. Philadelphia W B Saunders Company 1930.

Wilder's book fulfils the author's intention to provide a guide for the patient who is under the care of a physician. Believing that no patient with a disease as severe as diabetes should be encouraged to attempt self treatment he expects the patient to secure further guidance and additional interpretation and regulation from a physician. But as a supplementary measure this popular manual other editions of which are now widely used can be well recommended. Perhaps of most practical assistance to the patient will be the seventy-one recipes which do not make use of any unusual or patented ingredients. Equally helpful will be the table of emergency diets designed to meet the needs of the diabetic patient during a period of illness and the simple menu outlines for patients who must travel.

DIÄTETISCHE BEHANDLUNG DER HALTTUBERKULOSE UND ERNÄHRUNG BIOLOGIE. Von Professor Dr Albert Jeuneck und Assistenten Dr Fritz Bernhardt. Tuberkulose Bibliothek. Beiheft zur Zeitschrift für Tuberkulose Nr 3. Herausgegeben von Prof Dr Frida Kalmowitsh. Paper. Price 5 marks. Pp 48 with 24 illustrations. Leipzig Johann Ambrosius Barth 1930.

The beneficial effect of the Sauerbruch Hermannsdorfer Gerson diet on cutaneous tuberculosis is here presented in a concise and beautifully illustrated booklet. The subject matter is divided into two parts. The first part on the Sauerbruch Hermannsdorfer Gerson diet and skin tuberculosis presents discussions of the methods employed diet diet plus minerals phosphorus and cod liver oil and diet plus physical therapy especially ultraviolet radiation. The authors are fully convinced of the real value of the diet alone in clearing up tuberculous lesions of the skin. A chapter on statistics follows giving support to these treatments. Then come two interesting chapters on the evolution of local healing and the effect of the diet on general health and reports on the permanence of the results attained. The first section of the book closes with mention of 4 cases out of the 341 under their control that failed to respond to the treatment and a discussion of technical questions arising from the extended use of diets in tuberculous patients. The second section concerns itself with the rationale of feeding as observed in nature. A study of the structure of cells and unicellular organisms is given and the life of animals and primitive man with their instinctive methods of feeding is given as evidence in support of the rationality of the diet. Civilization and changes in the types of food and diet

of preparation especially concerning the salt content are discussed. Raw foods, the rational feeding of tuberculous patients and a comparison of the Sauerbruch Hermannsdorfer-Gerson diet and natural methods of feeding is made. The brief for the value of the special diet is carefully and conservatively made. On the other hand, mention is made of such dangers as trichinosis, tularemia and pork tapeworm, inherent in the consumption of raw foods. Wide recognition should be given to the methods of treatment discussed in this valuable booklet, especially in sanatoriums, where dietary control is comparatively easy but the diet or an approach to it is not impossible even as a part of home treatment.

A TREATISE ON ORTHOPAEDIC SURGERY. By Royal Whitman, M.D. M.R.C.S. (F.A.C.S.) Consultant to the Hospital for the Ruptured and Crippled, New York. Ninth edition. Cloth. Price \$10 net. Pp. 1085, with 981 illustrations. Philadelphia: Lea & Febiger, 1930.

Whitman's has been one of the standard textbooks on orthopedic surgery for the student, general practitioner and orthopedic surgeon since the first edition in 1901. The text of the present revision contains twenty-four chapters of excellent orthopedic manuscript and illustrations that are well arranged and easily read. One is impressed with the fact that the book is a compilation of years of work and experience with the ultimate attainment of an excellent textbook. In undertaking a revision of his text the author did not bring the statistics down to date except in a few instances. There seems to have been no attempt to modernize the photographic description of various orthopedic conditions. No description is given of several new important features in recent developments in the orthopedic field. There is no mention of the Glikrazzi apparatus in the treatment of scoliosis. Orr's treatment of osteomyelitis is given only one page. There is nothing on Bier's living scavenger treatment for osteomyelitis. Neither Boehler's work on fracture nor Steindler's compensation treatment of scoliosis is mentioned. The chapter on the foot is especially recommended. He has revised the chapters only slightly as follows. For rigid weak foot the operative treatment includes Miller's operation with three illustrations. The operation includes a flap of ligament and bone from the inner side of the foot including the three joints, removing sections from each articulation, correcting the deformity and replacing the flap. Whitman's abduction treatment of fracture of the femur is given and no changes are found except for the addition of Krenz's observations on twenty-three bodies in which he found that the most secure apposition of the fragments is obtained by a position of 45 degrees abduction with inward rotation and extension. It is regrettable that Whitman does not give his own statistics of his results on this method which he popularized. Almost no changes are made in the portion on Whitman's reconstruction operation for ununited fracture of the neck of the femur.

DER OERIERTE MACEN. Von Prof. Dr. Hermann Meyer Burgdorff und Dr. Walter Schmidt. Paper. Price 9.60 marks. Pp. 114 with 146 illustrations. Leipzig: Georg Thieme, 1930.

This will be found of interest to the internist, surgeon and roentgenologist alike. The diversity of symptoms arising following gastric operations require careful investigation. The roentgenologic study of the gastro-intestinal tract after operations on the stomach is difficult because of the anatomic and functional changes it undergoes. This difficulty is exaggerated by the multiplicity and variety of the types of gastric operation as well as the anastomoses used. A thorough understanding of the operative technique is essential to interpret correctly the appearance of the stomach postoperatively and to evaluate its function. The work is based on a clinical and roentgenologic study of 400 postoperative gastric cases. The authors after a preliminary discussion of the normal physiology and morphology of the stomach as well as the effect of disease consider the various possible operations on the stomach. The plan consists of a presentation of the important technical details of each operation, the clinical symptoms that may follow, and their roentgenologic interpretation as well as the difficulties that may arise during the examination and how to avoid them. The subject is discussed clearly and adequately and is the more valuable since it is based on a personal follow-up study of such a large number of cases. Diagrams and roentgenograms

graphically illustrate the many points presented. An excellent bibliography is appended. The monograph is not only interesting but of value to those who deal with medical or surgical gastroenterology, diagnostically or therapeutically.

GENETIC STUDIES OF GENIUS. Edited by Lewis M. Terman. Vol. III. The Promise of Youth. Follow-Up Studies of a Thousand Gifted Children. By Barbara Stoddard Purks, Dortha Williams Jencks and Lewis M. Terman. Assisted by Alice M. Leahy, Helen Marshall and Melita H. Oden. Cloth. Price \$6. Pp. 508. Stanford University Stanford University Press, 1930.

In this volume a thousand gifted children studied over a period of several years are analyzed as to their later development. The children concerned were first located and studied in 1921 and 1922. Since that time their development has been followed regularly with tests of achievement and intellect, and an attempt to determine as nearly as possible the reasons for genius. The first two volumes of this series covered the mental and physical traits of the children and the early mental traits of 300 of them. The present volume provides retests of intellect, a record of educational progress, scholastic and other interests, vocational plans and vocational achievements, social and personality traits, school acceleration by several and personality problems. In their summary, the authors provide a composite picture of a gifted child. They point out that, in the case of such of these gifted children as have grown up and married, the spouses are as a whole less well educated than the gifted subjects that have married them. They feel that something should be done about this, that it is indeed a duty of the gifted to select gifted mates to improve the character of the stock. One of the chief difficulties of eugenics is the fact that it has never yet been successfully capable of overcoming the effects of the biologic urge and the emotions.

MEDIZINISCHE PRAXIS. SAMMLUNG FÜR ARZTLICHE FORTBILDUNG. Herausgegeben von Prof. Dr. L. R. Grote, Chefarzt der C. von Noorden Klinik, Frankfurt a. M. Prof. Dr. A. Fromme, Direktor der chirurgischen Abteilung des Stadtkrankenhauses, Dresden-Friedrichstadt, und Prof. Dr. K. Warnekros, Direktor der staatlichen Frauenklinik zu Dresden, Band IX. Blutung und Thrombose. Von Prof. Dr. Hans Runge, Oberarzt der Universitäts-Frauenklinik Kiel. Mit einem Vorwort von Prof. Dr. Robert Schröder, Direktor der Universitäts-Frauenklinik Kiel. Paper. Price 8 marks. Pp. 108, with 18 illustrations. Dresden: Theodor Steinkopff, 1930.

This monograph is one of a series of eleven prepared for general practitioners. The present monograph contains only material of practical interest and application concerning uterine and cervical bleeding and leukorrhea. The arrangement of the material is ideal for the practitioner, the subject matter is presented in simple, concise language and the few illustrations that are reproduced are most instructive. In order not to confuse the practitioner, the author nearly always describes his own methods of treatment for each condition instead of enumerating the preferences of other authorities. The discussion on hemorrhage takes up eighty-five pages and includes bleeding not only from the uterus and cervix but also from the vagina and vulva. In the first part is a discussion of the physiology of uterine bleeding, including a consideration of the hormones. Then the author takes up the irregularities of menstrual bleeding and finally atypical hemorrhages not associated with the menses. At the end of this section is a chapter on the practical utility of hormone preparations in the treatment of uterine hemorrhage. The discussion on leukorrhea takes up twenty pages and is divided into discharges that arise in the vestibule, the vagina, the cervix, the body of the uterus and the tubes and leukorrhea during pregnancy. The booklet is well worth reading not only by general practitioners but also by specialists in gynecology.

SCIENCE AND THE SCIENTIFIC MIND. By Leo E. Sordla, Assistant Professor of English, Polytechnic Institute of Brooklyn, and Warren E. Giles, Instructor in English, Columbia University. Cloth. Price \$3. Pp. 506. New York: McGraw-Hill Book Company, Inc., 1930.

In this volume are collected some nontechnical scientific articles by twenty-four noted figures in the field of science. They represent the finest type of the essay. They are written by men with a thorough knowledge of the subjects they discuss. The publishers have wisely suggested the possibility that this material might well be used as a model for the scientific writer.

LES URTICAIRES CRISES HÉMOCLASIQUES Par Ldouard Joltrain directeur de l'Institut de recherches de la clinique médicale du Professeur Vidal à l'Hôpital Cochin Avec biographie du Professeur Fernand Vidal Paper Price 40 francs Pp 417 with illustrations Paris G Doin & Cie 1930

In this book, Joltrain an undoubted disciple of Vidal has taken the urticarial syndrome and placed it on a firm foundation. He deals first with the historical background, then with clinical manifestations, and then attacks the etiologic problems. In an enlightening manner he discusses alimentary agents fish, eggs wheat bread and others medicinal agents such as arsenic, bismuth antipyrine and insulin protein and such albuminoid agents as vaccine and hydatid fluid, and physical agencies, as cold, heat and light. Especially interesting is the chapter on the production of urticaria by fatigue. The association of urticaria with asthma, paroxysmal tachycardia, gallstones, eczema, hyperthyroidism, epilepsy, psychoses and other morbid conditions is thoroughly considered in a stimulating chapter. The closing chapters on the humoral changes during an attack of urticaria, the role of the constitutional factors, diagnosis and therapy are excellent. The book closes with a bibliography, which, contrary to the too common continental custom is international in scope. This book recommends itself to the general medical profession but most of all to the dermatologist.

PIERSOL'S HUMAN ANATOMY INCLUDING STRUCTURE AND DEVELOPMENT AND PRACTICAL CONSIDERATIONS By G Carl Huber M.D. Sc.D. Professor of Anatomy University of Michigan Ninth edition Cloth Price \$10 Pp 2104 with 1734 illustrations Philadelphia J B Lippincott Company 1930

The first edition of this book published in 1906 was edited by the professor of anatomy at the University of Pennsylvania Dr George A Piersol, who was assisted by the emeritus professor of surgery and by professors of anatomy of Harvard University, the University of Toronto and Western Reserve University. The present edition has been revised under the supervision of Dr G Carl Huber and several other teachers of anatomy at the University of Michigan. They have introduced a uniform anatomic nomenclature, and sections in the text dealing with the development of the lymphatics and the primary veins, the histogenesis of the blood elements the peripheral nervous system and sections dealing with the fiber paths of the central nervous system. A new anatomy always interests a medical student. The science is fundamental to the study of medicine and the student acquires his knowledge largely by visualization. He must see anatomy with his eyes his microscope and his mind. A great aid to the student in forming these mental pictures is a textbook that is filled with pictures. This book is well illustrated and therefore most helpful to the student. There are many new illustrations printed in a way that makes learning easier. Certain areas of an object are tinted for example, in order that special features may stand out. Many sagittal sections of parts of the body are included to show the relation of the various structures. The illustrations through their excellence, form a special feature of the book.

HANDBUCH DER THEORETISCHEN UND KLINISCHEN (ALLGEMEINEN UND SPEZIELLEN) RÖNTGENKUNDE Herausgegeben von Guido Holzknacht Band II Otologische Röntgendiagnostik Von Dr Ernst G Mayer Assistent am Zentral Röntgeninstitut Professor Dr G Holzknacht Wien Klinischer Beitrag—Die Wertung und Verwendung der Röntgenbefunde in der Otolgie Von Dr Karl Eisinger Assistent und röntgenologischer Referent der Univ Klinik für Ohren Nasen und Kehlkopfkrankheiten Professor Dr H Neumann Wien Paper Price 75 marks Pp 35 with 617 illustrations Vienna Julius Springer 1930

The reading of this volume makes one wish without prejudice to native authors that there were more works of this kind available in our own language. It appears to be a complete and detailed study of the temporal bone in states of health and disease. Roentgen technique is described in detail. An absorbing series of pen and ink illustrations indicate line by line in three standard German positions anatomic points of interest. A careful perusal of this section can hardly fail to be of immense benefit. There are chapters on disease states and fac-similes of actual x-ray films accompanied by pen and ink drawings to illustrate important features. Syphilis and tuberculosis and their x-ray manifestations as well as new growths benign and malignant, tumors fractures postoperative defects and congenital malformations are interestingly dealt with. There is a complete and absorbing discussion of the value and uses of roentgenology in otology by the second author.

VIII THE MOVEMENTS OF THE EYES IN READING By M D Vernon Reports of the Committee upon the Physiology of Vision Medical Research Council Special Report Series No 148 Paper Price 9d Pp 45 London His Majesty's Stationery Office, 1930

This monograph describes experiments made in the psychological laboratory at the University of Cambridge on the movements of the eyes in reading. The author investigated the effects of different factors, such as meaning, interest, and training of thought, on the effector mechanisms of reading, these effects being judged by observation of the ocular movements and the rate of reading. The basis of these experiments is the method originally invented by R Dodge and depends on the fact that the movements of the bright spot of light reflected from the cornea are the same in direction, though only half as great in magnitude, as those of the eyeball itself. These movements were recorded on a continuously moving film by the reflection of a small, strong beam of light, the source of which was a 100 candle power Edison Pointolite bulb which was directed toward the corner while the experimental subjects were reading various types of reading matter. It was proved that the most rapid and regular reading was shown by the mature reader with fairly easy material when he was attending to the content although this may show some modification. It is true that the average rate of reading of all types of material may be determined by training and use, since with one exception it was approximately the same for all subjects of these experiments who had had a similar general education, while it was slower for the subject who had had less education. It was shown that the reading time varies enormously about the mean according to the individual's reactions to the material read. The average duration and frequency of the fixation pauses together constituted the average reading time. The relation of duration to frequency was shown to be in all probability a function of the motor ability and accuracy of the subject's extra ocular muscles. No connection with actual ocular defect was established, but it is possible that there may be some variation of motor skill apart from any defect that can be diagnosed. The author concludes that the rate of reading varies enormously according to a variety of mental processes, unconnected with training which accompany reading, and of which conative impulses may possibly be the most fundamental. The article is more definitely related to the psychology of vision than to its ophthalmologic aspects but may well be read with interest by every ophthalmologist.

DER CHIRURGISCHE OPERATIONSKURSUS EIN HANDBUCH FÜR ARZTE UND STUDIERENDE Von Prof Dr Victor Schmieden o.o Professor der Chirurgie Direktor der chirurgischen Universitätsklinik zu Frankfurt a M und Prof Dr A W Fischer Oberarzt der chirurgischen Universitätsklinik zu Frankfurt a M Twelfth edition Cloth Price 48 mark Pp 543 with 586 illustrations Leipzig Johann Ambrosius Barth 1930

This deals principally with the fundamentals of surgery. It is an extremely popular book in German schools and information from German surgeons discloses that it is a necessary textbook for the German medical student in that his examinations in surgery are based on his knowledge of its contents. Surgical anatomy and the fundamental principles of surgical technique are taught with reference to this book as the textbook. This in itself proves its value. Aside from being a textbook it is also of great value as a work of reference. The arteries or blood vessels nerves and tendons the technique of amputation and radical resections of important structures as in the case of cancer are beautifully illustrated with colored drawings. In fact the illustrations are one of the principal assets of the book. The type and use of instruments in the various operations are clearly described and illustrated the same as in an instrument catalogue. There are numerous illustrations showing the exact technique of all the operations that are described. The author has developed these features in a clear simple direct and concise style.

DICTIONARY OF BIOLOGICAL EQUIVALENTS (FRENCH-ENGLISH) By Ernst Arschwager pathologist Bureau of Plant Industry U.S. Department of Agriculture Cloth Price \$4.50 Pp 252 with 76 illustrations Baltimore Williams & Wilkins Company 1930

In this volume the German terms frequently used in scientific literature are given their English equivalent. The source of the words is the publication *Biological Abstract*. The volume is useful.

Medicolegal

Right of Medical Society to Expel Members

(*Irwin Lorio et al and three other cases (La) 176 So 669*)

The Stranicola Employees Medical and Hospital Association, an association of the employees of a certain corporation to procure medical and hospital services for its members contracted with Drs Irwin Young and Morris to furnish such services. The physicians named were members of the East Baton Rouge Parish Medical Society which is chartered by the Louisiana State Medical Society and is bound as is the state society by the code of ethics of the American Medical Association. One provision in this code reads in part, as follows:

It is unprofessional for a physician to dispose of his services under conditions which interfere with reasonable competition among the physicians of a community.

An expulsion from the local society acts as an expulsion from the state society. Because of this the by-laws of the state society give any physician expelled from or refused membership in a local society the right to appeal to the council and house of delegates of the state organization.

The local society adopted a resolution that any member failing to comply with the section of the code of ethics set forth should be deemed no longer to desire membership in the local society. At a later meeting at which a quorum was present the local society declared by resolution that the contracts between the physicians named and the association were unethical. Thereafter an opportunity was given the physicians to surrender their contracts which they refused to do. The society then instituted proceedings to expel them. The physicians named and the hospital association individually brought court actions against thirty physician members of the society a majority of the membership to restrain them from expelling or voting to expel the complaining physicians. The contracts the complainants alleged, were not in violation of the code of medical ethics the expulsion of the physicians would deprive them of the right to use the only hospitals in the community, since the hospital management would permit only physician members of the local society to use their hospital facilities the use of the hospitals was necessary in the practice of the complainants and in discharging their contracts which constituted a valuable property right and the physician defendants had conspired to expel them from the society. A temporary injunction was granted, and the defendants appealed to the Supreme Court of Louisiana.

A local medical society said the Supreme Court of Louisiana, has the power to suspend or expel its members for legal cause, after determining from a due hearing had whether the cause alleged for suspension or expulsion has been established. After the final hearing, the member proceeded against has the right, given him by the local and the state society, to appeal to the council and the house of delegates of the latter, where the fairness of the trial may be looked into and the order of suspension may be annulled or affirmed as justice may demand. Since the appeal allowed by the by-laws of the two societies is an effective appeal—that is one which would prevent the local society from carrying out its order of expulsion until the appeal is passed on—the person aggrieved must exhaust his recourse within the society before he may resort to the courts. In 5 C J 1364, it is said:

The courts will not interfere with the internal affairs of an unincorporated association so as to settle disputes between the members or questions of policy discipline or internal government so long as the government of the society is fairly and honestly administered in conformity with its laws and the law of the land and no property or civil rights are invaded. Conversely the proceedings of the association are subject to judicial review where there is fraud oppression or bad faith or property or civil rights are involved or the proceedings in question are violative of the laws of the society or the law of the land or are illegal. Even in the case however the courts will not take jurisdiction unless the complaining member has exhausted such remedies as may be provided by the laws of the association itself.

The rule that a complaining member of a voluntary association must exhaust his remedies within the association before he may resort to the courts for relief has been recognized by this court in *Robb v Trecklin* 122 La 174, 47 So 455, and *Braden v*

Leavis 148 La 920, 88 So 117. In the instant case the complaining physicians have not exhausted their remedy within the society.

While said the Supreme Court, it is true that the injunction here prayed for is not directed against the association itself or all of its members the injunction is directed against a majority of the members. To restrain them from voting on charges preferred for the expulsion of a member is the same in effect as though the association or its entire membership had been restrained for the right of the association to function is thereby greatly interfered with, if not entirely destroyed. The principles quoted are therefore applicable to the present situation.

The injunctions issued by the lower court were accordingly dissolved and the local medical society was left free to proceed with the hearings.

"Patent Medicine" Defined—The article compounded and vended by the appellant was prepared from a secret formula as a medicine for the treatment of certain diseases, put up in packages or bottles and labeled with a name for immediate use. This was sufficient to constitute it a patent medicine in the sense in which that term is generally used and in which it was used in the city ordinance under which the question arose. While originally the word 'patent' was attached to an article because it was the subject of a patent, it has lost that significance by usage and has become merely a part of the name of the article. Where any article intended to be used for medicinal purposes is prepared from a secret formula and is placed in containers, either packages or bottles, for sale to be used without further preparation and is labeled so that it may be for immediate use it is a matter of common knowledge that such remedies are 'patent' or 'proprietary' medicines.—*Riggs v City of Hot Springs* (41) 26 S W (2d) 70.

Insurance Gonorrheal Rheumatism a "Serious Disease"—An insurance policy provided, among other things, that it was void if the insured, within two years from the date of its issue had attended a hospital or had treatment by a physician for any serious disease, complaint or operation. It was conceded that within the period named, the insured was in a hospital for eighty-five days, undergoing treatment for gonorrheal rheumatism. The Supreme Court of New York, Appellate Division, First Department on appeal held that the insured had a serious disease within the meaning of the policy.—*Buller v John Hancock Mut Life Ins Co* 240 N Y S 328.

Society Proceedings

COMING MEETINGS

- American Association for the Study of Gout: Kansas City Mo April 7-9 Dr J R Young 670 Cherry Street Terre Haute Ind Secretary
- American Association of Anatomists: Chicago April 2-4 Dr George W Corner University of Rochester School of Medicine Rochester N Y Secretary
- American Association of Pathologists and Bacteriologists: Cleveland April 2-3 Dr H T Karsner 2085 Adelbert Road Cleveland Secy
- American College of Physicians: Baltimore March 23-27 Mr E R Loveland 133 South 36th Street Philadelphia Executive Secretary
- American Orthopaedic Association: New York February 20-21 Dr George S Stevenson 370 Seventh Ave New York Secretary
- American Physiological Society: Montreal April 8-11 Dr Arno B Luckhardt 5216 Greenwood Avenue Chicago Secretary
- American Society for Experimental Pathology: Montreal April 8-11 Dr C Phillip Miller Jr University of Chicago Department of Medicine Chicago Secretary
- American Society for Pharmacology and Experimental Therapeutics: Montreal April 8-11 Dr E D Brown University of Minnesota Medical School Minneapolis Secretary
- American Society of Biological Chemistry: Montreal April 8-11 Dr H B Lewis University of Michigan Medical School Ann Arbor, Mich Secretary
- Federation of American Societies for Experimental Biology: Montreal April 8-11 Dr H B Lewis University of Michigan Medical School Ann Arbor Mich Secretary
- Pacific Coast Surgical Association: Victoria British Columbia February 27-28 Dr L L Gilcrest 384 Post Street San Francisco Secretary
- Southeastern Surgical Congress: Atlanta Ga March 9-10 Dr B T Beasley 45 Edgewood Ave Atlanta Ga Secretary
- Tri States Medical Association of Mississippi: Arkansas and Tennessee Memphis February 17-20 Dr V F Cooper Bank of Commerce Bldg Memphis Secretary

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Titles marked with an asterisk (*) are abstracted below.

American J Obstetrics & Gynecology, St. Louis

20 749 910 (Dec) 1930

- *Survey of Causative Factors in Sterility S R Merker Boston—p 749
- *Effect of Acriflavine Given Intravenously on Experimental Uterine Infection in the Dog J L Meyer Chicago—p 760
- Significant Problems for Obstetrician in Field of Mammary Cancer B J Lee New York—p 775
- *Method of Delivery and End Result of Two Hundred and Twelve Cases of Occiput Posterior Position N W Vaux Philadelphia—p 782
- Effect of Thyrophysin on Human Pregnant Uterus in Situ M P Kucker Richmond Va—p 791
- Analysis of Fifty Cases of Toxemia of Pregnancy P D Acierio Union City N J—p 797
- Determination of Fetal Maturity in Utero H Thoms New Haven Conn—p 807
- Paralysis of Bladder with Distention and Hemorrhage Immediately Following Catheterization Cases D Bissell New York—p 811
- Maternal Mortality in the Jewish Hospital of Brooklyn J Ronsheim and I Daichman Brooklyn—p 816
- Hydrogen Ion Concentration of Blood in Eclampsia H J Strander and N J Eastman Baltimore—p 822
- *Carbon Dioxide Content of Blood in the New Born H F Kane and I Kreiselman Washington D C—p 826
- Two Cases of Ureteral Calculus in Female D Bissell New York—p 828
- Case of Fetal Generalized Edema J J Gill and I Auld, Chicago—p 834

Survey of Causative Factors in Sterility—Meaker reports some of the results of an organized group study conducted during the past three years. He discusses absolute and relative sterility. In absolute sterility the initiation of the reproductive process is, at any rate for the time being, flatly impossible. This situation results from conditions of two general sorts: those suppressing entirely the production of ova or spermatozoa, and those entirely preventing the access of spermatozoon to ovum. Such disability may be temporary only and remediable by nature or art, or it may be permanent. Absolute sterility is found in about 30 per cent of sterile matings. In relative sterility, on the other hand, the initiation of the reproductive process is not definitely impossible but is to some extent impeded and made difficult. Ova and spermatozoa are produced but they may be deficient in number and subnormal in quality. The access of the male gamete to the female is not entirely prevented, but obstacles of one sort or another may be placed in the way. Thus the capacity for reproduction, still actually present, is diminished to a degree that varies within wide limits in different cases and fluctuates within narrower limits in the same case at different times. Sterility is commonly due to the combined influence of multiple causative factors. Any single one of these excepting the comparatively few absolute factors may not be sufficient to cause sterility; all of them together depress fertility below the threshold of conception. About one third of all demonstrable causative factors are extragenital conditions of constitutional depression, which lower the inherent fertility of the gametes. Such conditions are operative, in one or both partners, in nearly 90 per cent of sterile matings. In the male they are in the aggregate more important than abnormal local conditions. About one third of all demonstrable causative factors are on the male side and two thirds on the female side. In more than 90 per cent of clinical case, however, there is some division of responsibility between the two partners. Complete investigation points the way to adequate treatment which in the author's cases has thus far yielded a percentage of successful results more than twice as great as the average of successes obtained by former methods.

Acriflavine Intravenously in Experimental Uterine Infection—The experiments reported by Meyer show that the

intravenous injection of an appropriate dose of acriflavine hydrochloride has a definite beneficial effect on the course of the experimentally infected uterus of the dog. The earlier the dye is injected, the more definite the effect. In some instances, sterile cultures of the inoculated or infected uterine horn are obtained after acriflavine therapy. The beneficial effect of the acriflavine on the course of the uterine infection is also shown by the return to normal in body temperature by lysis. On the basis of these results it is believed that intravenous acriflavine in appropriate dosage is worthy of being tried in early uterine infections.

Method of Delivery in Occiput Posterior Position—Vaux is convinced that prenatal care of the mother with regard to the toxemias and antenatal health of the individual has so overshadowed some of the equally important conditions existing in these women that the subject of pelvic abnormalities and positions prior to delivery has been greatly neglected. He insists that the diagnosis of position should be made before labor onset if possible and definitely established as early as possible after the onset of labor. The primiparous patient with a moderately contracted pelvis should be looked on before the onset of labor as resulting in the possibility of a posterior position existing, with a difficult labor ahead. The aim of conserving the amniotic sac intact, and guarding more carefully the patient's strength during the long first stage of labor in posterior position cases, is of paramount importance in whatever method of delivery is selected. Intervention is not justified in posterior positions until the cervix is fully dilated and effaced and until the fetal head is at or near midpelvis.

Carbon Dioxide Content of Blood in New-Born—The carbon dioxide content of the blood of forty-seven new-born infants was determined by Kane and Kreiselman. The forty-seven specimens examined were divided into three groups: blood (1) from babies deep in asphyxia, (2) from babies who gasped once or twice during the collection of the blood, and (3) from babies who were born crying. It would seem that the carbon dioxide content of the blood in the new-born is consistently high, that the proportion of carbon dioxide increases with the degree of asphyxia, and, therefore, that the addition of carbon dioxide to oxygen as a resuscitating agent is contraindicated.

American Journal of Physical Therapy, Chicago

7 353 396 (Dec) 1930

- Biological Measurements of Ultraviolet Sources G H Maughan and J A Dye Ithaca N Y—p 559
- Radium Treatment of Epithelioma of Skin R Ward London—p 365
- Action of Ultraviolet Light on Ear H P Bellows Boston—p 369

American Journal of Public Health, New York

20 1275 1390 (Dec) 1930

- Time Cooperation and Research Measure Success in Health Work A J Chesley St Paul—p 1275
- Precise Evaluation of Light Therapy in Experimental Rickets J W Bunker and R S Harris Cambridge Mass—p 1287
- Evolving a Health Department E C Williams Richmond Va—p 1293
- Incidence of Partial Paralysis E L Bishop and H C Stewart Nashville Tenn—p 1307
- Agglutination Tests for Diagnosis of Undulant Fever S Bayne Jones Rochester N Y—p 1313
- Industrial Nurse in Gear with Machinery for Human Adjustment V H Hodgson New York—p 1323

American Review of Tuberculosis, Baltimore

22 571 802 (Dec.) 1930

- Pulmonary Abscess Case W B Soper New Haven Conn—p 571
- Tuberculosis of Liver Case E M Miller Auburn Calif—p 575
- Acute Miliary Tuberculosis of Liver Case L M Randolph Washington D C—p 593
- Relation of Tuberculous Cervical Adenitis to Pulmonary Tuberculosis G P Griffith and R H Miller Boston—p 598
- Epidemiology of Tuberculosis of Negroes L L Opie Philadelphia—p 601
- Anatomic Characteristics of Tuberculosis in Jamaica E I O'Leary Philadelphia—p 615
- *Tuberculous Infection in School Children H D Chadwick Wichita Mo—p 626
- Attempt to Influence Growth of Tubercle Bacilli in Animal Body by Modifying Concentration of Growth Promoting Substance in Tissue E R Long and A J Vawald Chicago—p 631
- Carbohydrates in Biological Processes: Fractionation of Tubercle Bacilli T B Johnson and A G Renfrew New Haven Conn—p 633

- Carbohydrates Associated with Ether Soluble Lipids of Tubercle Bacilli R J Anderson and E C Roberts New Haven Conn.—p 664
- Biochemical Studies of Bacterial Derivatives XII Preparation of Human Tubercle Bacillus Polysaccharide MB 200 and Biologic Properties P Masucci, K L McAlpine and J T Glenn Glenolden Pa.—p 669
- Biochemical Studies of Bacterial Derivatives XIII Occurrence of Mannose and d Arabinose in Polysaccharide Isolated from Filtrate of Human Tubercle Bacillus Cultures P Masucci and K L McAlpine Glenolden Pa.—p 678
- Biochemical Studies of Bacterial Derivatives XIV Preparation and Chemical Composition of Timothy Bacillus Polysaccharide MB 200 P Masucci and K L McAlpine Glenolden Pa.—p 682
- Anatomic and Physiologic Aspects of Diaphragm W S Lemon Rochester Minn.—p 685
- Hernia of Mediastinum Two Cases C C Habliston Baltimore.—p 702
- Course of Tuberculosis in Lungs E H Rubin New York.—p 710
- Anomalies in Artificial Pneumothorax Treatment J Gwerder Pedoja, Davos Switzerland.—p 717
- *Oleothonax Value of Intrapleural Injections of Olive Oil in Certain Phases of Pulmonary Tuberculosis C Sillig and M C Lang, Leysin, Switzerland.—p 725
- Extrapleural Thoracoplasty in Presence of Artificial Pneumothorax J R Head Chicago.—p 734
- *Thoracoplasty in Chronic Pulmonary Tuberculosis E H Bruns and J Casper Washington D C.—p 739
- *Radical Phrenicotomy T B Aycock and C C Habliston, Baltimore.—p 757
- *Phrenico-Exeresis in Pulmonary Tuberculosis A T Cooper, Denver.—p 769
- Collapse Therapy in Pulmonary Tuberculosis W C Pollock, New York.—p 780

Relationship of Tuberculous Cervical Adenitis to Pulmonary Tuberculosis—Grabfield and Miller are of the opinion that the correlation between thickening of the apical pleura and tuberculosis of the tonsils and cervical lymphatics is too close to be a matter of chance, and consequently one must take into account the possibility of this path of infection in pulmonary tuberculosis

Tuberculous Infection in School Children—This study by Chidwick and Zacks is based on 42,071 children examined and given the Pirquet tuberculin test during a period of three years. The ratio of reactors in the 42,000 children studied in this series shows a gradual trend upward from 21 per cent infections at age 5, and 28 per cent at age 10, to 35 per cent at age 15. The average percentage for the whole group is 28. Different sections in the same city may show a wide variation in the percentage of reactors. It was found in one city of 60,000 that the number of children reacting to the tuberculin test in different school districts varied from 11 to 60 per cent. The number of reactors increases with the opportunities that the child has for contact with bacillus carriers. Persons with chronic forms of pulmonary tuberculosis, such as are found in granite quarry workers, expose and infect more children than persons with the more acute forms, who live a much shorter time after the disease becomes infectious. Crowded living conditions afford more opportunities for contact and congested areas show a higher percentage of infection. Twice as many reactors are found among children with a history of direct contact with a case of pulmonary tuberculosis. Another factor to be taken into account is bovine infection. In a few rural towns with a scattered population and less than the average number of pulmonary tuberculosis deaths, 38 per cent of reactors were found. The majority of the small towns however, show a little less than the average percentage for the state as a whole. The boys of the Irish Canadian and Teutonic groups in this series show a much higher incidence of infection than the girls. The death rate in Massachusetts for all forms of tuberculosis declined from 144 per hundred thousand in 1917 to 73 in 1927. Three important factors have operated to bring about a reduction in the number of infected children. 1 The steady decline in the death rate results in fewer persons with tuberculosis at large in the community to spread infection. 2 The state has a little more than one bed for each tuberculosis death in which to segregate cases of tuberculosis and so further reduce the foci of infection in the homes of these patients. 3 Pasteurized milk is now available for about 60 per cent of the population of the state and by so much is the possibility of bovine infection curtailed.

Oleothonax Olive Oil in Pulmonary Tuberculosis—Sillig and Lang assert that oleothonax if judiciously applied is a useful adjunct in the treatment of certain complications of pulmonary tuberculosis and if carefully done, is not dan-

gerous to the patient. In one case of spontaneous pneumothorax reported, the treatment appears to have prolonged the life of the patient.

Thoracoplasty in Chronic Pulmonary Tuberculosis—Bruns and Casper have performed 210 thoracoplastic operations on 120 different patients and for statistical purposes have divided the patients into groups—those operated on from 1922 to 1928, inclusive, which demonstrate more the end results, and those in 1929 and 1930, showing more the immediate effects of thoracoplasty. Among the 1922 to 1928 group, eight (8.6 per cent) operative deaths occurred, as compared with no operative deaths in 1929 and two so far in 1930. This is probably due to greater care in selecting cases, improved operative technique and better adjustment of the extent of the operation to the patient's condition. Twenty six are apparently cured, twenty-three are arrested, nineteen are improved, seven are unimproved, and forty five died.

Radical Phrenicotomy—Aycock and Habliston dissected 130 phrenic nerves in the anatomic laboratory. Approximately 65 per cent of phrenic nerves in this series either showed anomalies or received accessory fibers below the usual site of operation. To insure the maximum beneficial results that should attend hemidiaphragmatic paralysis, phrenico-exeresis should be performed rather than simple phrenicotomy. It is of the utmost importance to remove at least 11 cm of the distal portion of the nerve in order to insure the desired result.

Phrenico-Exeresis in Pulmonary Tuberculosis—Cooper regards phrenico-exeresis as a valuable procedure in selected cases of mainly unilateral pulmonary tuberculosis, and it may be of possible benefit in bronchiectasis, also, that even some involvement of the contralateral lung with small cavitation is not in itself a definite contraindication. This operation if there is a successful result definitely tends to put the side operated on at rest. The operation in itself is a rather minor one and can be performed as a rule under local anesthesia. It has been found to be useful in particular cases in which there were pleuritic adhesions which prevented the administration of pneumothorax, and, if successful, it not only lessens the motion of the diaphragm and thus the respiratory excursion on the operated side but causes a definite partial collapse of the lung. The operation may be even of benefit to lesions of the upper lobe, as it appears that the operation in itself may not tend primarily to cause a collapse of the less involved part of the lung but may cause rather a greater collapse of the diseased portion. The less diseased lung if disease is in the base may not tend to collapse following such operation if the more diseased portion of the lung is in the apex. If the less diseased portion is in the base of the lung this part tends to move upward *en masse* in many cases, tending to compress an upper diseased portion.

Archives of Dermatology and Syphilology, Chicago

22 957 1166 (Dec) 1930

- Purpose and Progress of American Dermatological Association U J Wile Ann Arbor Mich.—p 957
- Effect of Skin of Emotional and Nervous States III Theoretical and Practical Consideration of a Gastro-Intestinal Mechanism J H Stokes and D M Pillsbury Philadelphia.—p 962
- *Conditions Affecting Clinical Excretion of Bismuth P J Hanzlik and H G Mehrtens with Assistance of D C Marshall F Watson and J Sprulding San Francisco.—p 994
- Senile Sebaceous Adenoma Five Cases R Nomland Chicago.—p 1004
- *Treatment of Staphylococcal Infections of Skin by Bacteriophage E D Crutchfield and B F Stout San Antonio Texas.—p 1010
- Idiopathic Macular Atrophy of Skin F C Combes New York.—p 1022
- Penetration of Organic Compounds of Arsenic into Cerebrospinal System G W Raiziss and M Severac Philadelphia.—p 1031
- Senile Keratoses and Seborrheic Keratoses J J Eller and V J Ryan, New York.—p 1043

Conditions Affecting Clinical Excretion of Bismuth—The effects of water drinking and of thermal, mechanical and chemical measures on the clinical urinary excretion of bismuth were investigated by Hanzlik and Mehrtens in subjects possessing gluteal depots of bismuth metal. The excretion of bismuth and diuresis varied directly with the changes in water intake. Of the four thermal measures tried, all of which increased the body temperature steam baths and injections of typhoid vaccine increased the excretion of bismuth, though variably, in the majority of subjects used. Tub baths gave

equivalent results, and malarial fever was ineffective. A mechanical device that increased the muscular activity in the gluteal regions caused moderate increases in bismuth excretion in two of three subjects. The chemical measures tried were the chloride, iodide, thiocyanate, thiosulphate and bicarbonate of sodium and ammonium chloride, all given orally, except thiosulphate, which was given intravenously. Increases in the excretion of bismuth in the majority of subjects tested were caused by chloride, iodide and thiosulphate, and in half of the subjects by thiocyanate, while ammonium chloride and sodium bicarbonate gave variable or ineffective results. The increases in bismuth excretion, when present, were not necessarily related to increased diuresis, the urine output being often decreased, though frequently variable, among the groups of subjects receiving the different measures. It appears that certain measures might be employed for increasing the excretion of bismuth, as in poisoning, and for mobilization of tissue bismuth in promoting therapy of syphilis. The simplest, most convenient and economical measures would be the liberal drinking of water and the use of ordinary salt (sodium chloride) in conjunction with the dietary. Various possibilities are discussed.

Treatment of Staphylococcal Infections of Skin by the Bacteriophage—The result of treatment of fifty-seven patients with staphylococcal infections are reported by Crutchfield and Stout. The clinical results are shown to be much better than in similar cases in which other means of treatment were used. Results cannot be obtained without a bacteriophage that is capable of lysing the infecting organism and transmitting such power.

Archives of Ophthalmology, Chicago

4 803 984 (Dec) 1930

- Iridenceleisis cum Iridotomia Meridionali. Operative Method Both in Acute and in Chronic Primary Glaucoma. S Holth. Oslo. Norway.—p 803
- Chronic Retrobulbar Neuritis. W H Wilmer. Baltimore.—p 817
- Opacities of Vitreous. B Samuels. New York.—p 838
- Ocular Lesions of Rat Bite Fever in Guinea Pigs. S Bayne-Jones and M L Lerner. Rochester. N Y.—p 858
- Rationale of Dermal Transplant in Trachoma. Microscopy of Graft in Two Cases. B Friedman. New York.—p 868
- Frequency of Astigmatism. P C Kronfeld and C Devney. Chicago.—p 873
- Central Nervous System Control of Ocular Movements and Disturbances of This Mechanism. H A Riley. New York.—p 885
- Differentiation of Ocular Manifestations of Hysteria and Ocular Migraine. E B Spaeth. Philadelphia.—p 911

Archives of Surgery, Chicago

21 887 1056 (Dec) 1930 Part I

- *Tribrom Ethanol Anesthesia. R M Waters and C W Muehlberger, Madison. Wis.—p 88
- Blue Domed Cysts and Cancer of Breast. A McGlannan. Baltimore.—p 912
- *Skeletal Metastases from Carcinoma of Rectum. A H Aufses. New York.—p 916
- *Value of Drugs in Relief of Ileus. A Ochsner. I M Gage and R A Cutting. New Orleans.—p 924
- Complete Occlusion of Superior Vena Cava by Primary Carcinoma of Lung. A I Brown. San Francisco.—p 959
- Disruption of Pelvis with Luxation of Innominate Bone. Eighteen Cases. C W Peabody. Detroit.—p 971
- Contracture Resulting from Tenotomy. H K Davenport and S W Ranson. Chicago.—p 995
- Periosteal Lipoma. Two Cases. E I Bartlett. San Francisco.—p 1015
- Effect of Pericardiotomy on Mechanics of Circulation. C S Beck and W V Cox. Cleveland.—p 1023

Tribrom-Ethanol Anesthesia—Waters and Muehlberger record their experiences with the clinical administration of this drug in 100 cases. The patients represented a wide range of surgical risks. No advantage appears to result from the use of tribrom ethanol fluid (67 per cent tribrom ethanol plus 33 per cent amylene hydrate) in place of crystalline tribrom ethanol for the preparation of anesthetic solutions. The crystalline form of the drug gave more satisfactory results than the amylene hydrate solution. Details of the use of this drug are discussed fully. The authors find justification for the addition of tribrom ethanol to the present well recognized list of anesthetic drugs.

Skeletal Metastases from Carcinoma of Rectum—Eight cases of rectal carcinoma complicated by skeletal metastases are reported by Aufses. In the main the site of the metastases conforms to the original table of frequency as stated by von

Recklinghausen. Metastases to the bone in carcinoma of the rectum occurs late in the course of the disease, but with sufficient frequency to make it of clinical significance and to make its early diagnosis of great importance in relief from pain and the prevention of fractures.

Value of Drugs in Relief of Ileus—The results obtained by Ochsner et al appear to be in line with those obtained by the more careful and unprejudiced experimental investigators who have previously published reports on the action of pituitary extract. Pituitary extract would not only seem to be an ineffective drug in the treatment for intestinal atony but also would appear to be a dangerous drug in such a condition. The effect of physostigmine on the intestinal tone and motility, according to their investigations, is virtually that which might be expected from a consideration of previous reports, both clinical and experimental. This is the only drug that they have found to be of consistent efficacy, and the fact is stressed that the action of this drug seems to be enhanced in intestinal obstruction at least in intestinal obstruction no further advanced than that used for the purposes of the present experimental investigation. Choline, acetylcholine, pitocin and peristaltin have proved disappointing. Apparently little dependence can be placed on these therapeutic agencies in the stimulation of either normal or hyperexcitable intestinal musculature. All in all, it would seem that the drug therapy for intestinal atony rests on a rather precarious foundation, and although the results of these experimental investigations are by no means conclusive, they suggest a well nigh complete revision of evaluation of the efficacy of drug therapy in the relief of conditions of intestinal quiescence.

Canadian Medical Association Journal, Montreal

23 747 894 (Dec) 1930

- Drug Addiction. W E Dixon. Grand Mere. Que.—p 747
- *Lesser Curvature Gastropasty (Flap Exteriorization of Ulcer Formation of Gastric Pouch). J Armour. Montreal.—p 756
- *Retroadisplacement of Uterus and Correction. W F Abbott. Winnipeg.—p 761
- Infection of Surgical Wounds with Diphtheria Bacilli. F H Prissick. Montreal.—p 767
- Radium Treatment of Cancer of Tongue. S Cade. London.—p 771
- Radium and Surgery in Cancer of Tongue. D Quick. New York.—p 774
- Radium Treatment of Buccal Carcinoma. G E Birkett. Manchester.—p 780
- Treatment of Carcinoma. F B Gurd. Montreal.—p 784
- Radium in Gynecology. S Forsdike. London.—p 792
- Complete Fixation in Scarlet Fever with Immune Serums. F Green. Montreal.—p 798
- Silicosis. T H Belt. Toronto.—p 802
- Pregnancy Complicated by Heart Disease and Tuberculosis. W B Hendry.—p 805
- Special Feeding Methods for Infants. A Goldbloom. Montreal.—p 807
- Prognosis for Serological Cure in Hereditary Syphilis. E A Morgan. Toronto.—p 811
- After Dinner Complaints. G C Hale. London. Ont.—p 815
- Administration of Bitters. V E Henderson. Toronto.—p 818

Gastropasty of Lesser Curvature—The method of gastropasty described here is brought forward by Armour to avoid the possibility of interfering with the motor mechanism of the lesser curvature. It is offered as a possible treatment for lesser curvature and posterior wall ulcer (penetrating posteriorly) as a substitute for the present day more radical partial gastrectomy, the stomach being left fixed to its bed.

Retroadisplacement of Uterus and Its Correction—Abbott describes an operation that he has employed successfully in eight-seven cases. It consists of the transplantation of the round ligament together with the plication of a considerable portion of the broad ligament, this structure being used to help support the uterus.

Florida Medical Association Journal, Jacksonville

17 253 296 (Dec) 1930

- Peroral Endoscopy. Cases. J W Taylor and S B Forbes. Tampa.—p 261
- Radium in Control of Subcutaneous and Mucous Membrane Hemorrhage by Irradiation of Spleen. J M Hoffman. Pensacola.—p 265
- Analgesia and Anesthesia in Obstetrics. A D Stollenwerck. Jacksonville.—p 268
- Bacteriologic Diagnosis of Diphtheria. J Mathieu. Miami.—p 270
- Donors of Blood Transfusion. J E Boyd and G W Richardson. Jacksonville.—p 272
- Radium in Benign Uterine Hemorrhage. G Raap. Miami.—p 273
- Pulmonary Tuberculosis. C H Ferguson. Thomasville. Ga.—p 275

Georgia Medical Association Journal, Atlanta

19 503 548 (Dec.) 1930

- Nurse and Physician C. V. Moore Cuthbert—p. 503
 Chronic Lipoid Nephrosis Case L. M. Blackford Atlanta—p. 505
 Sociological Phase of Medical Profession W. F. Wells Atlanta—p. 510
 Importance of Prompt Treatment of Eye Injuries W. H. Cabaniss Athens—p. 513

Illinois Medical Journal, Oak Park

58 393 468 (Dec.) 1930

- Economic Factors Relating to Oral Hygiene Progress H. E. Phillips, Chicago—p. 407
 School Physician in Community Health Program A. A. Crooks Peoria—p. 412
 Current Menaces of Medical Profession C. J. Whalen Chicago—p. 418
 Domestic Mechanical Refrigeration in Relation to Public Health A. H. Hegel Chicago—p. 424
 School Tuberculosis Physician in Chicago F. Leavitt Chicago—p. 427
 Physical Diagnosis L. Clendenen Lawrence Kan—p. 429
 Etiology and Treatment of Convergent Squint S. Wolf Chicago—p. 433
 Rectal and Perirectal Drainage of Deep Pelvic Abscess C. J. Drueck Chicago—p. 434
 Relation of Colloids of Blood to Clinical Medicine T. Wright, Chicago—p. 438
 Agranulocytosis with Case Report G. Parker Peoria—p. 440
 Tularemia Two Cases F. T. Jirka Chicago—p. 447
 Tularemia Case H. R. Keiser Chicago—p. 448
 Chronic Otorrhea W. P. Wherry Omaha—p. 449
 Milk Sickness W. E. Walsh Morris—p. 454
 Associated Neurologic Conditions in General Practice L. H. Sloan Chicago—p. 457
 Clinical and Roentgenologic Value of Lateral Roentgenogram of Chest C. H. Warfield, Chicago—p. 461

Journal of Infectious Diseases, Chicago

47 445 526 (Dec.) 1930

- Production of Smooth From Rough Forms of Bacterium Dysenteriae Sonne S. A. Koser and N. C. Styron Chicago—p. 443
 Dissociation of Bacterium Dysenteriae Sonne as Influenced by Variations in Culture Medium S. A. Koser and N. C. Styron—p. 453
 Types of Brucella in One Hundred and Twenty Nine Cases of Undulant Fever W. N. Pridmore and J. G. McAlpine Storrs Conn—p. 478
 *Bactericidal Effects of High Frequency Sound Waves O. B. Williams and N. Gaines Austin Texas—p. 485
 Decomposition of Ureter by Bacillus Proteus A. A. Day W. M. Gibbs A. W. Walker and R. E. Jung Chicago—p. 490
 *Human Carriers of Streptococcus Epidemicus I. Pilot B. Hoffman and D. J. Davis Chicago—p. 503
 Sporadic Septic Sore Throat Due to Streptococcus Epidemicus I. Pilot and D. J. Davis Chicago—p. 507
 *Herpes Encephalitis in Monkeys of Genus Cebus Observations on Green Streptococcus E. B. McKinley and M. Douglas New York—p. 511

Bactericidal Effects of High Frequency Sound Waves

—Williams and Gaines have made a study of the lethal effects of supersonic waves on bacteria. It has been possible to kill cells of *Escherichia coli* by exposure in liquid to high frequency audible sound waves of about 8,800 cycles per second. The lethal effects are probably due to a violent agitation set up within the cell by these waves. Lytic action on red blood corpuscles has been observed.

Human Carriers of Streptococcus Epidemicus—Pilot

et al. assert that *Streptococcus epidemicus* is found in the throats of persons during interepidemic periods. The chief habitat appears to be the crypts of the faucial tonsils. Three carriers of *S. epidemicus* had enlarged tonsils, cervical adenitis and arthritic pains. The recognition of these carriers is important because of their possible role in the transmission of the disease to others and particularly in the accidental infection of the udder of the cow, with subsequent explosive epidemic sore throat spread through the milk.

Herpes Encephalitis in Monkeys of Genus Cebus—

Herpetetic encephalitis has been produced by McKinley and Douglas in five of nine monkeys of the genus *Cebus*. The disease in its acute and subacute form closely resembles human encephalitis. The pathologic lesions are also similar to those of the human malady except for the presence of intranuclear herpetetic inclusion bodies in the ganglion cells of the cortex. The disease kills *Cebus* monkeys in from six to eleven days. Secondary invading streptococci were demonstrated in the brain of one monkey. Healthy monkeys receiving an emulsion of the brain of this monkey did not show any streptococci either on cultivation of the brain or on inoculation of it in rabbits. These studies indicate that the green streptococcus is not related to the virus infection in question but that this microbe may, in

occasional animals under optimal conditions, invade the central nervous system after the "soil" has been previously prepared by the virus. The authors therefore see no reason for attaching an etiologic relationship to the green streptococcus in such a disease as encephalitis.

Journal of Urology, Baltimore

21 549 711 (Dec.) 1930

- Combined Pyeloscopy Clinical Value and Technique T. Hryntschak, Vienna—p. 549
 Neurosis of Bladder G. L. Hunner Baltimore—p. 567
 Urography New Method with Physiologic Data R. E. Cumming Detroit—p. 587
 Interpretation of Pyelograms M. B. Wesson San Francisco—p. 595
 Ischemy of Kidney H. L. Kretschmer Chicago—p. 617
 *Untoward Results in Bilateral Pyelography I. J. Shapiro and L. L. Veseen Chicago—p. 621
 Papillary Epithelioma of Ureter P. A. Rohrer Seattle—p. 639
 Urethral Ectopia Case in Infancy J. C. Sargent and R. Irwin Milwaukee—p. 645
 Primary Carcinoma in Diverticulum of Bladder G. H. Elwell Madison Wis.—p. 649
 Treatment of Urinary Obstruction Due to Malignant Disease of Prostate J. A. C. Colston Baltimore—p. 655
 Case of Thrombophlebitis Following Suprapubic Prostatectomy W. H. Toulson Baltimore—p. 661
 *Metastatic Abscesses of Genito-Urinary Tract G. W. Fish New York—p. 665
 Prostatic Obstruction Caused by Intra Extra Vesical Hypertrophy 500 Cases W. R. Chynoweth Battle Creek Mich—p. 669
 *Isocaine as Urethral Anesthetic B. H. Hager and A. S. Loevenhart Rochester Minn—p. 681
 Collecting Apparatus for Ureterostomy into Skin of Lower Abdomen C. P. Mathe San Francisco—p. 689
 Modification of Shaw Young Irrigating Decompression Apparatus D. M. Davis Baltimore—p. 693
 New Cystoscopic Holder W. A. Council Baltimore—p. 699

Untoward Results in Bilateral Pyelography—Five cases are reported by Shapiro and Veseen in which death supervened after and directly ascribable to cystoscopic examinations in which bilateral pyelography was carried out. The mediums used were thorium nitrate 15 per cent, two cases, sodium bromide 25 per cent, one case, sodium iodide 12.5 per cent, two cases. Four postmortem examinations were made. In two cases extensive infection had supervened. In the other two, and probably also in the case in which a postmortem was not done, the cause of death seemed to be the toxic action of the pyelographic medium. The authors contend that pyelography is a diagnostic procedure and as such should not be associated with any mortality. They therefore advocate unilateral pyelography.

Metastatic Abscesses of Genito-Urinary Tract—The case of metastatic abscesses of the genito urinary tract cited by Fish required a nephrectomy, two nephrotomies, and drainage of a prostatic and of a peri urethral abscess. Perhaps the most interesting feature of the case is that the abscesses were confined to the urinary tract. There was destruction of at least half of the remaining kidney but the patient made a good recovery. He entirely regained his weight returned to rather hard work in the country had a normal blood urea and clear urine, and was in all respects a well man.

Isocaine as Urethral Anesthetic—Hager and Loevenhart are of the opinion that the degree of anesthesia obtained with isocaine compares favorably with that obtained with the use of cocaine. A 1 or 2 per cent solution of isocaine appears to be adequate to permit of satisfactory urethral instrumentation. The satisfactory anesthesia coupled with the lessened toxicity isocaine being three tenths as toxic as cocaine, indicates a high therapeutic index for isocaine as a surface anesthetic for the urethral mucosa.

New England Journal of Medicine, Boston

203 1181 1223 (Dec. 11) 1930

- Primary Torsion of Great Omentum E. D. Errico Boston—p. 1181
 Nursing Situation M. A. Burgess—p. 1189
 Hospital as Means of Educating Nurses J. B. Howland Boston—p. 1193
 Public Health Nursing S. R. Hume Boston—p. 1195
 Auto Blood Transfusion G. Elliott Boston—p. 1197
 Perforation of Cecum by Foreign Bodies Case Simulating Appendicitis P. W. Vestal New Haven Conn—p. 1199
 Does Follow Up Social Service Pay in Venereal Disease Clinic? H. L. Ireland Lowell Mass. A. A. Nelson, Boston and A. I. Gorman—p. 1200

Occupational Therapy and Rehabilitation, Baltimore

9 315 415 (Dec) 1930

- Occupational Therapy in European Mental Hospital Ranch, India
A K Mukherji, Ranch—p 323
Economic Factors of Occupational Therapy J Van Driel—p 335
Occupational Therapy W R Duntun Jr—p 343
Occupational Therapy at Murchie Sanatorium I Crant—p 351
Ethics for Occupational Therapist N McKee—p 357
Philadelphia School of Occupational Therapy M T Paul Philadelphia
—p 361
Adjustable Stool Chair L J Haas White Plains N Y—p 367

Oklahoma State Medical Assn Journal, Muskogee

23 325 352 (Oct) 1930

- Toxic Goiter J D Long Oklahoma City—p 325
Stricture of Rectum V K Allen Tulsa—p 328
Vesicovaginal Fistula J Z Mraz Oklahoma City—p 333
Urologic Diagnosis in General Surgery B A Hayes Oklahoma City
—p 335
Spinal Anesthesia W H Livermore, Chickasha—p 339
Amytal as Anesthetic W G Maddox Dallas Texas—p 341
Anesthesia from Surgical Viewpoint F L Carson J E Hughes
Shawnee—p 343

Physical Therapeutics, New York

48 577 640 (Dec) 1930

- Electrosurgical Progress E N Kime Indianapolis—p 577
Clinical Indications for Direct or Constant Current J E G Waddington
Detroit—p 591
Lupus Erythematosus W E Montgomery Pueblo Colo—p 596
Common Skin Affections E N Kime Indianapolis—p 599
Uses and Abuses of Physiotherapy Modalities L J Kosminsky Tex
arkana Ark—p 616

Public Health Reports, Washington, D C

45 2979 3040 (Dec 5) 1930

- Venereal Disease Among Coast Guard Enlisted Personnel During Fiscal
Year 1929 W W King—p 2979
*Military Lung Disease Due to Unknown Cause R R Sayers and
F V Meriwether—p 2994

45 3179 3235 (Dec 26) 1930

- Health and Hospital Services in Alameda County Calif J W Mountain
—p 3179
Biochemical Studies on Antineuritic Vitamin A Seidell and M I
Smith—p 3194

Military Lung Disease Due to Unknown Cause—Sayers and Meriwether report the work done in a clinic established at Picher, Okla for the study and control of silicosis and tuberculosis among the miners. Physical examination including roentgen examination of the chest, is made of the men prior to employment and at least once yearly thereafter. A total of 18,285 individuals had been examined up to and including December 1929. About 125 cases of typical military lung disease were found by roentgen examination among these 18,285 individuals during routine physical examination. A majority of the affected persons did not have sufficient symptoms to cause them to stop work or to seek medical aid. The most characteristic finding was a large number of discrete, dense, shottile spots scattered over the lung areas. Tubercle bacilli were present in only two of the eighty-eight cases in which an examination was made of the sputum. Unstained smears of thirty-one cases (all those examined) were positive for fungi. Two types of fungi were identified—*Aspergillus fumigatus fischeri* and *Aspergillus niger*. Ten cases tested with antigen of *Aspergillus fumigatus fischeri* gave negative reactions, six cases tested with *Aspergillus niger* all gave positive reaction. The authors are of the opinion that thirty-eight cases reported by Sutherland as presenting military calcification of the lungs are probably instances of the same condition that was found at Picher. In addition they suggest that these military calcifications may be due primarily to fungous infection.

South Carolina Medical Assn Journal, Greenville

26 9 18 (Dec) 1930

- How Eye Was Saved by Plastic Surgery L O Mandlin Greenville
—p 299
Infant Feeding C M Burpee Augusta—p 300
New Physical Sign in Pulmonary Embolism Occurring During Labor
J K Young, Anderson—p 305
Treatment of Empyema in Children W H Prioleau Charleston—
—p 308

Southern Medical Journal, Birmingham, Ala

23 1079 1188 (Dec) 1930

- *Intravenous Cholecystography and Liver Function Determination Clinical and Roentgenologic Value S R Miller and C A Waters, Baltimore—p 1079
Simultaneous Bilateral Pneumothorax L J Moorman, Oklahoma City—p 1088
Etiology of Middle Ear Suppuration M M Cullom Nashville Tenn—p 1091
*Treatment of Hemorrhoids M C Pruitt Atlanta Ga—p 1098
Primary Lymphosarcoma of Thymus with Metastases Below Diaphragm R E Knutti Nashville Tenn—p 1104
Bismuth Treatment of Cardiovascular Syphilis L M Blackford Atlanta Ga—p 1108
Brass Paper Fastener in Bronchus M P Stiles Birmingham—p 1113
Treatment of Common Injuries of Knee Joint G A Caldwell Shreveport La—p 1114
Radium Treatment of Early Epithelioma of Lip H Hailey Atlanta, Ga—p 1121
Hurry Tongue Following Adjacent Radiation M T Van Studdiford New Orleans—p 1125
Treatment of Ringworm Infection of Feet with Ethyl Chloride Spray K P A Taylor Havana Cuba—p 1128
Description of Injection Method of Studying Circulation J W Moore W T Hamilton J M Kinsman and R G Spurling Louisville Ky—p 1131
*Diagnosis and Treatment of Anemias of Infancy H W Josephs Baltimore—p 1135
Hypotension in South W T Vaughn and W R Graham Richmond Va—p 1140
*Distinction Between Appendical Allergy and Appendicitis in Three Hundred and Ten Appendices J A McIntosh Memphis Tenn—p 1147
Clinical Study of 3,800 Georgia Children C B Barrett Atlanta, Ga—p 1150
Syphilis of Stomach L L Hill Jr New Orleans—p 1153
Treatment of Obesity W M Ballinger Washington D C—p 1155

Intravenous Cholecystography and Determination of Liver Function—Although it is clearly recognized by Miller and Waters that their series of 131 cases is a small number on which to base any positive conclusions, they feel that the evidence produced is of value so far as it strengthens the weight of opinion in favor of intravenous, as compared with oral cholecystography. The dye has been found comparatively non-toxic, since few disagreeable reactions have been encountered and none of them of an at all alarming nature. The procedure is not technically difficult or particularly time consuming, three injections being readily given within the space of an hour in a private office. The cholecystograms are unquestionably far superior to those obtained very often after oral administration of the dye. Even though the intravenous method is admittedly the superior one, it is probably true that its uniform adoption will be slow. The method, simple as it is, should in no sense be exploited by those not thoroughly proficient in the technique of intravenous therapy. At least it can be asserted that no internist can accept the report "gallbladder not visualized" as conclusive roentgen evidence of disease of the biliary tract when such films have been obtained following oral administration of the dye. Confirmation or denial of such a report, following intravenous injections, is mandatory, particularly when the clinical picture of gallbladder disease is by no means clear.

Treatment of Hemorrhoids—Pruitt stresses the point that since there are many types of piles no one method of treatment is suitable for all cases. Each patient should be given sufficient examination to determine the type of the pile present. The type of treatment should be based on observations resulting from the complete examination of the individual case and not on the patient's diagnosis. It should not consist of a prescription for an ointment as is customary with many busy physicians.

Treatment of Anemias of Infancy—Josephs feels that medicinal iron given in sufficiently large amounts has a greater effect in raising hemoglobin than food iron. The results with copper as a supplement to iron are highly suggestive. Little need be expected from the use of copper and iron in premature babies and during the course of an infection. In regard to liver as a supplement to iron it has succeeded where copper has failed but on the other hand liver over a prolonged period of time is disagreeable for older children and somewhat expensive and it would be quite satisfactory if copper should prove of value as an efficient adjunct to iron in the treatment of anemia.

Distinction Between Appendical Allergy and Appendicitis—Data presented by McIntosh support the concept of the existence of appendical allergy and suggest its incidence among 310 surgically removed appendices.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2 1073 1110 (Dec. 27) 1930

- *Symptoms and Pathogenesis of Hemorrhagic Diathesis H. L. Tidy —p. 1073
 Nonfilarial Elephantiasis D. J. Harries —p. 1079
 Placental Hormones J. R. Collip —p. 1080
 *Clinical Use of Certain Placental Extracts A. D. Campbell and J. B. Collip —p. 1081

Symptoms and Pathogenesis of Hemorrhagic Diathesis

—Tidy asserts that the hemorrhages in the hemorrhagic diathesis are primarily due to increased permeability of the capillary endothelium. Blood platelets normally protect the capillary endothelium, and the diminution in number observed in the hemorrhagic diathesis is secondary to this action. Escape of plasma from the vessels accounts for certain of the symptoms, especially abdominal colic. Hemorrhages from a single site—for example, hematuria—may occur. There is no constant characteristic change in the blood cells.

Clinical use of Certain Placental Extracts

—The observations reported by Campbell and Collip deal in the main with the possible therapeutic value of the 85 per cent alcohol soluble fraction. A few clinical experiments with the so-called anterior pituitary-like fraction of the placental extract (85 per cent alcohol precipitate) are included. One hundred and twenty-three cases of deranged ovarian function as judged clinically have been treated and observed for periods varying from three to nine months. All the patients investigated were apparently normal individuals, and pelvic examination did not reveal gross or obvious pathologic conditions in the conformation or size of the uterus or its adnexa. A dose corresponding to 75 Gm of placenta daily, given in divided doses in water or orange juice before meals, has been used in the majority of cases. There are individuals who do not tolerate the extract well. In any case in which untoward symptoms, such as nausea or vertigo, have been observed, the dose has been temporarily reduced until tolerance was acquired. According to their experience the use of this extract does not seem to have any untoward effect on impregnation and gestation. It is worthy of note that four patients became pregnant while under treatment for ovarian dysfunction. From thirty-six to forty-eight hours after the institution of therapy, some patients volunteered that they experienced a feeling of general well being and of mental alertness. No effect on libido was reported. As controls, ten women with normal menstrual cycles were submitted to treatment for three months without any alteration being noted either in the length of the interval or in the duration of the epoch. The dosage used in cases of dysmenorrhea was as a rule, the equivalent of 25 Gm of placenta administered daily for approximately seventeen days, beginning with the cessation of a menstrual period. During the week preceding menstruation (twentieth to twenty-eighth day) the dose was raised to 75 Gm daily, and treatment was continued until the onset of the flow and then stopped for a period of about a week. Other individuals with normal cycles obtained relief when treated for seven days preceding the anticipated period. The second principle (85 per cent alcohol precipitate, or the anterior pituitary-like substance of placenta) was employed in metrorrhagia. The results in this small group of cases have been most encouraging. The extract used in these cases contained approximately 10 rat units per cubic centimeter and was administered subcutaneously. No enlargement of breasts or milk secretion occurred with the administration of this hormone. It should be noted here that the diagnosis is essential and that uterine exploration should always precede the treatment.

1 124 (Jan. 3) 1931

- Radium in Service of Surgery H. S. Souttar —p. 1
 General Practitioner in Antenatal Work W. H. F. Oxley —p. 5
 Accessory Lobe of Azygos Vein H. P. Nelson and G. Simon —p. 9
 Knee Jerk and Its Variation an Indication for Sympathetic Ramisection or Trunk Section N. D. Royle —p. 11
 *Convalescent Serum in Prophylaxis of Measles D. A. Nabarro and A. G. Signy —p. 12
 Measles in Public School L. R. Lempriere —p. 14

Convalescent Serum in Prophylaxis of Measles

—Nabarro and Signy report their experiences in this field.

Originally they used 3 cc for children up to 3 years and 5 cc for children over 3. This has never been strictly adhered to, as they increase the dose for big children and for adults, and also if the incubation is well advanced. They have now increased the doses to 5 and 7 cc and believe that this is a more adequate and satisfactory dosage. All the injections are made intramuscularly into the buttock. Serum has been tried in treatment of severe measles without success, because the antibody content is not sufficiently high and enormous doses would be required to have any effect. For the same reason the serum is of no value for the blanching of a rash although it is sufficiently strong to prevent the appearance of the rash in an area if injected before the rash appears generally (Debre's phenomenon). Whole blood may be used instead of serum, and in this case the blood of a convalescent patient is injected intramuscularly into the recipient, the dose being double the serum dose. They have injected serum in 586 cases of which 461 injections were made at the Children's Hospital following ward infections and 125 were cases from practitioners in various parts of the country following home or hospital infections. In the hospital series there were 14 failures, or 3 per cent, and the outside cases 7 failures, or 5.6 per cent. The "failures" in both series include several injected after the fifth day, and are almost all extremely mild cases.

Journal of College of Surgeons of Australasia, Sydney

3 151 308 (Nov.) 1930

- Surgicopathological Interpretation of Roentgen Ray Appearances of Antral (Highmore) Diseases R. G. Brown —p. 351
 Pathology of Chronic Suppurative Antral Sinusitis D. A. Welsh and R. G. Brown —p. 193
 Iow Backache C. W. B. Littlejohn —p. 201
 Carcinoma of Kidney K. Inglis and E. B. Jones —p. 225
 *Chronic Appendicitis L. R. Chandler —p. 235
 *Epithelial Proliferation and Metaplasia in Chronic Cholecystitis E. S. J. King —p. 245
 *Compensatory Hyperplasia of an Accessory Lingual Thyroid R. A. Willis —p. 257
 Surgery of Biliary Tract H. R. G. Poate —p. 264
 Melanosarcoma of Spinal Arachnoid F. G. Bell —p. 279
 Hypertrophic Spinal Meningitis P. S. Foster —p. 280
 Paget's Disease of Glans Penis M. P. Susman —p. 282
 Intussusception Due to Secondary Melanocarcinoma K. Ross —p. 283
 Carcinoma of Lung of Long Duration L. H. Ball —p. 286
 Skeletal Metastases from Thyroid Carcinoma D. B. Rosenthal and R. A. Willis —p. 290
 Multiple Myeloma R. A. Willis —p. 295

Chronic Appendicitis—Chandler asserts that, if a correct diagnosis has been made, appendectomy should result in a complete cure of every case of chronic appendicitis. The most reliable proof of the accuracy of the diagnosis is the end-result record. The patient who is promptly and permanently relieved following a simple appendectomy did have appendicitis and the patient who is not cured following the operation probably did not have an appendix which was responsible for his complaints. Thus the burden of responsibility is placed on the diagnosis.

Chronic Cholecystitis—A routine study made by King of a number of cases of chronic cholecystitis reveals a remarkable degree of proliferation of the epithelium of the organ. Epithelial structures are found frequently in the muscular and subperitoneal coats. The characteristic form is the glands of Luschka. The proliferation may cause macroscopic thickening of the wall and resemblance to carcinoma, a condition described as cholecystitis cystica. Definite features distinguish it from carcinoma. Interesting changes in the epithelium occur in a proportion of cases with the formation of mucous glands and glands resembling the glands of the pylorus and the glands of Brunner. Squamous epithelium is rare in the gallbladder (though found in two cases of this series), but squamous carcinoma is not very uncommon. Carcinoma was found in fifteen cases of those examined (6 per cent).

Accessory Lingual Thyroid—Willis describes a case in which a latent primary carcinoma of the base of the tongue produced massive cervical metastases diagnosed as 'brancio-genic carcinoma'. These metastases destroyed the thyroid gland. Adequate compensatory enlargement then occurred of a lingual thyroid that had been previously unsuspected which drew attention to the 'latent' primary carcinoma in the same situation.

Journal of Obst & Gynec of Brit Empire, Manchester

37 753 991 (Winter) 1930

- Double Monsters Their Circulatory System and Other Anatomic Abnormalities Complications in Labor A L Mudhar —p 753
- Three Hundred Cases of Abortion T V Pearce —p 769
- Treatment of Eclampsia by Improved Prophylactic Method with Telephonic Consultations Stroganoff —p 807
- Calcified Ovarian Tumor M Salmond —p 821
- Atresia Vulvae Superficialis M Salmond —p 824
- Five Cases of Rupture of Uterus During Labor T M Healy —p 827
- Dystocia Due to Idiopathic Dilatation of Fetal Urinary Tract K Edgecombe —p 832
- Difficult Midwifery Under Spinal Anesthesia J W Hunter —p 835
- Twins in Primiparas K Das —p 841

Lancet, London

2 1383 1438 (Dec 27) 1930

- Conception of "Nervous Disorder" M Culpin —p 1383
- Treatment of Lobar Pneumonia by Felton's Serum J Cowan R Cruickshank, D P Cuthbertson J Fleming and A W Harrington —p 1387
- Lobar Pneumonia Treatment by Concentrated Antiserum By Physicians to Royal Infirmary —p 1390
- Acute Myelogenous Leukemia J H Easton —p 1394
- Approaching Appendix Through Transverse Incision A J Cokkinis —p 1396
- Two Unusual Cases of Suicide (1) Two Gunshot Wounds in Head (2) Poisoning with Binovalate of Potash W Stewart —p 1397

Treatment of Lobar Pneumonia by Felton's Serum—On the basis of clinical experience, Cowan et al commend Felton's serum as an addition to the other agents used in the treatment of pneumonia. Felton's serum is active only against infections of types I and II, it has no therapeutic value in type III and group V infections. Of the fifteen type I infections one patient died, of the twenty-six type II, two patients, of the type III, the only patient of the thirteen group V infections, two patients. The mortality among 856 untyped cases treated without serum up to 1930 was 18.46 per cent. The mortality of typed serum treated cases (in 1930) was 10.3 per cent.

Lobar Pneumonia Treatment by Concentrated Antiserum—The evidence submitted in this report suggests that the administration of Felton's concentrated antiserum is of distinct benefit in the treatment of lobar pneumonia due to organisms of types I and II. Its action appears to be greater in the case of type I pneumonias. The records show that there were fewer deaths among the patients who received serum. Serum treatment seems to lessen the severity of the disease and undoubtedly shortens the febrile period in a proportion of cases. Many patients appeared to become less ill and more comfortable as a result of the injections. Anaphylactic phenomena were observed in two patients after the first dose of serum, although in both cases the preliminary eye test was negative.

Acute Myelogenous Leukemia—Easton suggests that in cases of acute leukemia the infection is a virulent one—in two cases hemolytic streptococci were isolated—and that the individual has strong powers of resistance to begin with but that it is in the great majority of cases overcome in the end. The fact that it commonly attacks healthy young men would support this. That every case of acute leukemia is due to an infection is difficult to imagine, far more so to prove, but Easton suggests that this causation is more frequent than is generally supposed.

Approaching Appendix Through Transverse Incision—The incision made by Cokkinis is absolutely horizontal and extends from the superior anterior iliac spine inward for 1½ to 3 inches, according to the age and build of the patient. The external oblique aponeurosis is exposed and is split in the line of the skin incision and the muscular fibers of the internal oblique are exposed. These fibers are here running almost transversely and a line of separation is made with a blunt instrument. The transversalis is then split in a similar manner and the transversalis fascia divided in the same direction. The peritoneum is now exposed and at the outer angle of the wound this can be seen coming off the iliac fossa to the anterior abdominal wall in the form of a lateral reflection which stands out as a definite fold. It is picked up and incised horizontally, a 1½ inch opening usually being sufficient. The cecum will be found immediately under the wound and can be delivered easily, except when anchored by adhesions. An adherent subcecal

retrocecal, retrocolic or ileac appendix can be freed and brought out with greater ease than through the more medial oblique or vertical incisions in common use. In the presence of a localized abscess, shut off from the general peritoneal cavity, the incision extends from 1½ to 2 inches inward from the superior anterior spine. After the aponeurosis has been divided and the muscles have been split, the reflection of peritoneum coming off the iliac fossa is sought and peeled inward off the iliacus until the abscess can be felt from behind. It is then opened with the finger or with sinus forceps and cleaned out with swabs on holders. A drainage tube is inserted into the abscess cavity and brought out through the outer end of the wound. With the patient lying a little over on the right side excellent drainage is provided. In this way all danger of soiling the peritoneum is avoided.

Medical Journal of Australia, Sydney

2 809 840 (Dec 20) 1930

- Vitamin D Administration in Parathyroid Deficiency Following Thyroidectomy F S Hansman —p 809
- Radium Therapy in Cancer of Nose Larynx and Esophagus H M Moran —p 814
- Action of X and Gamma Radiation on Aqueous Solutions of Iodine and Potassium Iodide G Harker —p 817
- Gunshot Wound in Abdomen Pea Rifle Bullet in Gallbladder E S Meyers —p 822
- Sprue and Amebic Dysentery H Crawford and N M Gutteridge —p 823

Vitamin D in Parathyroid Deficiency Following Thyroidectomy—Subsequent to thyroidectomy or to excessive radiotherapy to the thyroid gland, the following symptoms may develop as a manifestation of parathyroid imbalance: tetany, cramps, numbness, tingling sensation, a feeling of "pins and needles," grave depression, pronounced irritability, cravings for food, excessive appetite, marked gain in weight, pallor, and undue fatigue. Control experiments definitely rule out the possibility of these symptoms being due to hypothyroidism. Hausman states that all these symptoms disappear on the administration of relatively large doses of viosterol. Six cases are recorded which illustrate the response to vitamin D.

Practitioner, London

126 1 192 (Jan) 1931

- Acute Abdominal Diseases L Moynihan —p 5
- Functional Diseases of Heart R O Moon —p 13
- Heart Failure and Treatment M Campbell —p 21
- Variations in Arterial Pressure and Control J F H Dilly —p 39
- Early Diagnosis and Treatment of Pulmonary Tuberculosis I C T Burrell —p 47
- Chronic Bronchitis G Marshall —p 59
- Treatment of Influenza C B Ievick —p 65
- Common Colds and Nasal Catarrh W J Harrison —p 75
- Chronic Indigestion A F Hurst —p 84
- Constipation S W Patten —p 94
- Pylorhea Alcoluria A T Pitts —p 105
- Treatment of Hemorrhoids W B Cabriel —p 114
- Removal of Eyestrain as Preventive Treatment F Clarke —p 121
- Depression H Crichton Miller —p 130
- Sprains and Strains A Hallows —p 139
- Physiotherapy in Rheumatism F H Humphris —p 147
- Treatment of Fibrositis W Edgecombe —p 157
- Eczema H D Haldin Davis —p 167
- Acne Vulgaris H C Semon —p 176

Tubercle, London

12 145 192 (Jan) 1931

- Tuberculous Morbidity and Mortality Among House Contacts of Sputum Positive Cases in North Worcestershire H M Turner —p 14
- Pulmonary Tuberculosis Assessment S J Cummie —p 155
- Asbestos Bodies in Feces in Case of Pulmonary Asbestosis S K Gloyne —p 158

Tuberculous Morbidity and Mortality Among House Contacts of Sputum Positive Cases in North Worcestershire—Turner outlines the actual results of tuberculous infection in sputum positive households in a certain geographic area with a population of 160,000. Evidence is produced to establish the fact that house contacts of sputum positive cases of phthisis suffer both an incidence rate of and a death rate from tuberculosis significantly greater at all ages than the corresponding rates for the general population. In view of these facts it is strongly urged that from the point of view of tuberculosis schemes all contacts of sputum positive cases are themselves potential cases of tuberculosis. For this reason it is essential

that they should be periodically examined. Such examination is, in itself, not of great value, unless on the first signs or symptoms of loss of health (which cannot be diagnosed as some other definite clinical condition) the contact can be given a proper course of the appropriate treatment. The author advocates that powers should be given to make preventive treatment available for the contacts of sputum-positive cases, before the contact has reached the stage of being 'notifiable' according to the generally accepted standards.

Bull et Mem de la Soc Med des Hôpitaux de Paris

(54) 1627 1662 (Nov 24) 1930

- Blood Transfusion in Typhoid. J. Rouillard —p 1628
- *Multiple Profuse and Severe Hemorrhages in Course of Typhoid Checked by Blood Transfusion. A. Audibert, A. Leriche and A. Ravnaud —p 1630
- Undulant Fever. Treatment with Acriflavine Hydrochloride. Two Cases. J. Chuiton and Negric —p 1633
- Pulmonary Complications in Typhoid. G. Crussade and A. Tardieu —p 1635
- Transparietal Injection of Iodized Poppy Seed Oil for Study of Pulmonary Drainage. Ameuille and Darbois —p 1643
- Spontaneous Cure of Embolic Pulrit Abscess of Right Superior Lobe. J. Hutinel and R. Kourilsky —p 1645
- Polythrombotic Form of Suprarenal Meningococcemia. J. Troissier and Y. Boquien —p 1654

Severe Hemorrhages in Typhoid Checked by Blood Transfusion.—Audibert et al report a case of severe hemorrhage in the course of typhoid in which the patient was cured by blood transfusion. The typhoid symptoms began with an angina that lasted about three weeks. Fever then set in and within a week the patient's temperature had reached 40°C (104°F). The fever then abated. Three weeks later the temperature of the patient was normal and she thought she was cured. Suddenly, however, she began to bleed, first at the gums, and then through the skin, the kidneys and the conjunctivae. Her skin was covered with purpuric patches. The hemorrhages became more intense and the patient seemed to be bleeding to death. A transfusion of 300 cc of blood was given. The hemorrhage was completely checked within a few hours and the general condition of the patient was greatly improved. Four days later a second transfusion of 200 cc was given. After a few days the purpura was scarcely visible and the patient was soon able to leave the hospital. The authors consider this case significant because of the rarity of such a syndrome in which multiple, profuse and severe hemorrhages appear in the last stages of a case of typhoid. It is also especially noteworthy because of the apparently fatal prognosis and the striking therapeutic effects of the blood transfusions.

Bulletins et Mem de la Soc Nat de Chirurgie, Paris

56 1239 1267 (Nov 22) 1930

- Combination of Long Standing Medioclavicular Luxation. Fracture of Scapula and Trapezometacarpal Luxation. R. Tilher —p 1240
- Retrolunar Carpal Luxation with Fracture of Scaphoid. P. Misumi —p 1243
- Hypertonic Solution of Sodium Chloride in Intravenous Injection in Severe Intestinal Occlusion and in Crickia from Ovarian Cyst. J. Lecercle —p 1246
- *Effects of Ligature of Inferior Thyroid Artery on Calcemia and Functional Symptoms in Ankylosis. R. Leriche and A. Jung —p 1249
- Prevention of Postoperative Pulmonary Complications by Enemas of Creosoted Milk. A. Basset —p 1257

Effects of Ligature of Inferior Thyroid Artery on Calcemia and Functional Symptoms in Ankylosis.—Leriche and Jung report a case of multiple ankylosis of twelve years standing. The spinal column was completely rigid, only the slightest movements of rotation and flexion of the head were possible. The ankylosis had affected other articulations also for two years and the patient was almost unable to move at all and had intense pain. Since hypercalcemia was present the authors decided on parathyroidectomy. They removed a small body on each side, believing them to be the inferior parathyroids. One of the fragments, however, was merely a bit of fatty tissue. Immediately after the operation the patient showed a marked improvement: the pain disappeared and he was able to move his arms to turn himself in bed and finally to stand erect. The calcemia was reduced from 0.116 to about 0.09 Gm. Six weeks later, however, the ankylosis set in again and the patient gradually returned to his former condition although the calcemia remained normal. The authors feel that

the unfavorable developments in this case are not so discouraging as they appear at first because of the long duration of the disease. They consider it encouraging that any amelioration should have been produced. This case illustrates the extreme difficulty of identifying the parathyroids. The authors report a second case in which the ankylosis had begun five months earlier. Before attempting to identify and isolate the parathyroids they divided the inferior thyroid artery between two ligatures, one of them close to the branches of the artery extending to the superior and inferior parathyroids. Although the fragment that they removed, as in the first case, did not prove to be parathyroid, the ligatures served to decrease the glandular secretion and the patient's condition was immediately improved. The calcemia was lowered, the pain disappeared and wherever the ankylosis was not complete, mobility of the joints was restored. The amelioration has persisted for four months. The authors feel that this case demonstrates the efficacy of parathyroid operations performed sufficiently early in the development of the disease.

Paris Medical

2 473 484 (Nov 29) 1930

- *Intervention of an Individual Factor in Local Reactions Produced by Injections of Camphor. H. Busquet and C. Vischniac —p 473
- Treatment of So-Called Synovial Cysts. Moutel —p 475
- Franquill Apnea in a Hyperthermic New Born Infant. C. Massias —p 478
- Treatment of Enteroneurosis. P. Coulouma —p 480

The Individual Factor in Reactions from Injections of Camphor.—By means of a number of experiments, Busquet and Vischniac show that the local reactions sometimes produced by subcutaneous injections of camphor are not the result of the olive oil in which the camphor is administered, nor of the accidental contamination of the material injected nor of the faulty technique nor of any properties of the camphor itself. The symptoms are evidently caused by an individual predisposition of certain patients. The authors proved experimentally that an abnormal circulatory condition in the area of absorption of the medicament favors the production of inflammatory reactions by the injection of camphor in either oily or aqueous solution.

Schweizerische medizinische Wochenschrift, Basel

60 1097 1120 (Nov 22) 1930

- Problems of Comparative Geographic Pathology. M. Askanazy —p 1097
- *Prophylaxis of Divers' Disease. Blattner and Zangger —p 1104
- Experimental Investigations with BCG. W. Silberschmidt —p 1106
- Observations on Ixodes Ricinus. G. Peillon —p 1109
- Localization of Ixodes Ricinus. Pfisterer —p 1110
- Obstetrics in Rural Districts. R. Beck —p 1110

Prophylaxis of Divers' Disease.—Blattner and Zangger point out that the waterworks that some cities in Switzerland have at deep lakes sometimes make it necessary for divers to work at a depth of about 40 meters. In rendering expert opinion on the death of a diver the authors stress that the diver had risen to the surface rapidly and that the extreme difference in pressure had caused the hemorrhages and death. In order to avoid such occurrences the divers should be given instructions, so that they will understand and adhere to the rules that are given for their safety. The authors think that in order to avoid similar fatalities as the one described a high pressure apparatus should be kept in readiness wherever divers have to work at depths of more than 12 meters so that if the diver is forced to come up rapidly the apparatus will be there to help in the adjustment of the pressure and thus prevent hemorrhages and death.

Archivio Italiano di Chirurgia, Bologna

27 413 536 (Oct) 1930

- Physiopathology and Pathologic Anatomy of Ureters Affected with Calculus. P. Pieraccini —p 413
- Treatment of Tuberculous Cystitis. G. Pieri —p 454
- *Inguinal Hernia of Stomach. V. Novaro —p 483
- *Renal Changes Following Cauterization. R. Palma —p 509

Inguinal Hernia of Stomach.—Novaro describes in detail a case of mediogastric strangulated hernia and, in that connection, gives a survey of inguinal hernia of the stomach, reporting chronologically the nineteen cases described in the literature and studying the etiology, the pathogenesis, the pathologic anatomy, the symptomatology, the diagnosis, the course and the

prognosis and the treatment. He treats also the various complications: strangulation, stenosis, obstruction, adhesions, inflammation.

Renal Changes Following Cauterization—Palma studies, first, the changes that occur in the kidneys as a result of their cauterization, second, whether, as a result of circumscribed cauterizations, lesions develop in more distant parts, and, third, whether, as a result of the cauterization of one kidney, changes are brought about in the opposite kidney. From his researches it appears that cauterization of the kidneys constitutes a trauma not always compatible with the life of the animal, even though the intervention involves only one of the kidneys, the other being intact. Even superficial lesions damage the whole organ in its anatomic integrity. Aside from the immediate damage, the cauterizations are the cause of remote lesions, owing to the fact that a phase of connective tissue organization follows the initial lesions. The cystic dilatation of the renal tubules may be regarded as a direct consequence of the sclerosis of the connective tissue which causes circulatory disturbances through the lesions of the vessel walls and constriction of the renal tubules. As a result of the cauterization of one kidney, severe lesions of the opposite kidney develop, although they are transient. As to the explanation of these lesions, the author does not favor so much the idea that they are due to the action of a specific toxin, developing from the products of autolysis of the cauterized renal tissue, on the opposite kidney, but thinks rather that the changes are associated with a toxic action similar to that which any other toxic substance would excite if introduced into the organism and eliminated through the kidneys.

Clinica Chirurgica, Milan

33 1099 1206 (Oct.) 1930

- New Types of Apparatus for Anesthesia with Combined Gases C Lorenzetti—p 1099
Endothelioma of Breast O Amorosi—p 1106
*Researches on Postoperative Hyperglycemia B Bonomini—p 1119
*Negative Experimental Observations on Tar Cancer U Fabris—p 1148

Researches on Postoperative Hyperglycemia—Bonomini, in summarizing the outcome of his research, states that the course of the curve of postoperative hyperglycemia appears in a certain relation with the behavior of physiologic factors that regulate the glycemia and also with organic changes due to diseases of a surgical nature. The influence of the emotions on the curve is, however, slight. The relation between hyperglycemia and postoperative acidosis is frank but not so intimate as some authors make it appear. Also a relation with postoperative hyperuremia is evident. No relation, however, was found between the hyperglycemia and the duration of the anesthesia and the acetoneuria. The operative hyperglycemia has been, in the author's cases, more or less intense but always of short duration. It reaches its culmination toward the end of the anesthesia and decreases steadily, disappearing usually after twenty-four hours. It is prevented by the intravenous injection of a sufficient quantity of insulin (from 10 to 15 units).

Negative Experimental Observations on Tar Cancer—Fabris, having never been able to produce tar cancer after numerous experiments on about 600 animals, holds that the prolonged irritating action of tar (coal tar, Norway tar) may prepare a terrain adapted to the development of blastomas in the sense of provoking an antitlastic dysfunctioning in the various tissues of the organism. For the final causation of the cancer some parasitic agent must become associated which constitutes for Roncali and his school the true specific element in the appearance of the blastoma.

Clinica Pediatrica, Modena

12 831 922 (Oct.) 1930 Partial Index

- *Ether in Treatment of Traumatic Tetanus C Salvioh—p 848

Ether in Treatment of Traumatic Tetanus—Salvioh treated three patients with grave traumatic tetanus (in two of whom the evolution was known to be at seven and eight days respectively after the wound) by the rectal administration of a mixture of ether in oil as coadjuvant treatment with tetanus antitoxin. All the patients recovered. To verify the favorable action of the method on the evolution of the disease, animal experiments were made. In rabbits injected with fatal doses of tetanus toxin the rectal administration of ether did

not prevent death but prolonged the life of the animals longer than that of control animals. The repeated administrations of mixtures of a weak concentration of ether caused a condition of cachexia in the animals, probably the effect of the ether. The mechanism by which ether acts on the evolution of tetanic intoxication is unknown.

Folia Gynaecologica, Pavia

27 321 425 1930

- *Action of Methenamine on Uterine Contraction C Veicest—p 321
*Microscopic Observations on Changes Induced in Uterus and Adnexa by Irradiation of Uterine Carcinomas and Fibromas O Macchiarulo—p 325
Subserous Fibromyoma of Uterus with Torsion of Pedicle A Dallera—p 359
Roentgen Physiology of Uterus and Tube A Dallera and A Rossi—p 373

Action of Methenamine on Uterine Contraction—Veicest is convinced that methenamine used intravenously offers in the obstetric clinic an effective means for the stimulation of uterine contractions or for the provocation, in suitable cases, of labor, without injury to the mother or to the fetus.

Changes Induced in Uterus by Irradiation of Uterine Tumors—Macchiarulo's histopathologic researches lead him to these conclusions. Irradiation in ordinary therapeutic doses affects the uterine mucosa, producing various degenerations of the cellular elements: pyknosis, karyorrhexis, vacuolation and changes in the aspect of the glands. Not even the muscular tunic of the uterus is immune to the action of the rays—atrophy, necrosis and fibrosis. The cell resistance of the uterine vessels is suppressed and these show various changes in the vascular tunics. From the researches of the author there develops evidently an angioplasmia in the irradiated tumors. The histochemical changes that are observed in fibromyomas extend to all neoplastic elements: muscular fibrocytes, connective tissue fibers, vessels. The author ascribes the changes to factors of a chemical, physical and colloidal nature called into action by the irradiation. The author agrees with previous investigators in attributing to a reaction of the mesenchyma the leukocytic lymphocytic plasmacellular and histocytic infiltration observed in irradiated tumors. The loss of the cilia, the rupture of the cell nucleus and vacuolation of the elements of the tube are phenomena specifically assignable to the modifying action of the intra uterine radiant energy. Emanations of radium coming from the uterine cavity produce atresia of the follicles in advanced maturation in the prolapsed ovaries and in a state subject to the influence of irradiation. It is possible, however, that the follicles, after a period of latency, reacquire their normal function.

Prensa Medica Argentina, Buenos Aires

17 717 760 (Oct. 20) 1930

- Concomitance of Lesions in Both Internal and External Meniscus of Same Knee Caused by Trauma Twenty Nine Cases R Finocchietto and A A Covaro—p 717
Acute Ataxia of a Polyneuritic Type from Carbon Sulphide Poisoning Case O Luque—p 740
Case of Tabetic Osteoarthropathy Surgical Treatment J Diez and J Michans—p 742
Emotional Mutism Cured by Suggestion Case E Mouchet—p 746
*Vomiting of Tuberculous Patients Treated with Intravenous Injections of Hypertonic Solution of Sodium Chloride R F Vaccarezza C A Videla and G Pollitzer—p 747

Vomiting of Tuberculous Patients Treated with Intravenous Injections of Hypertonic Solution of Sodium Chloride—Vaccarezza et al used with success intravenous injections of 10 cc or a 10 per cent solution of sodium chloride in the treatment of vomiting of tuberculous patients. During the first two or three days two injections are given daily, and then one injection should be given daily during a period that varies according to the results obtained but which as a rule may be prolonged for about one week. The injections should be given long after meal time to avoid a reaction of the organism manifested by the appearance of nausea. Hypertonic solution of sodium chloride used when freshly prepared has a rapid and marked action in arresting the vomiting of tuberculous patients. As a rule the vomiting disappears after the first injection though sometimes three or four injections are necessary for its complete disappearance. Early discontinuance of the treatment may cause a reappearance of the vomiting in

which case the treatment should be repeated. The authors gave the treatment to eleven patients with pulmonary tuberculosis with several types of vomiting (emetic cough, simple vomiting merely to expel food, or maternal vomiting, with either mucus or bile). In ten of the patients, the vomiting disappeared. In the remaining patient the results of the treatment were fair (diminution of the amount vomited and in the frequency of vomiting, but not complete disappearance of it). In some of the patients the disappearance of the vomiting was associated with the improvement of some other symptoms, such as the diminution of the fever, increased appetite and feeling of well being. The authors consider the number of patients treated hitherto as being too small to permit one to draw conclusions.

Semana Medica, Buenos Aires

37 1329 1392 (Oct. 30) 1930

- Care of Eyes A. J. Manes—p. 1329
- *Slight Painful Uronephrosis. Treatment by Denervation of Renal Pedicle and Nephropexy J. Salleras—p. 1334
- Internal Podalic Version in Muscular Dystocia with Retraction of Bandl's Ring. Mechanism of Labor According to Fernandez's Technique A. Manno—p. 1341
- Plastic Surgery of Nose R. Dellepiane Rawson and E. Gonzalez Avila—p. 1351
- *Efficacy of Commercial Preparations of Anterior Lobe of Hypophysis A. Guitarte—p. 1357
- *Nondiabetic Infantile Glycosuria P. B. Landabure—p. 1358
- *Excision of Presacral Nerve in Dysmenorrhea and in Pelvic Neuralgia E. L. Vila and J. A. Viriot—p. 1360
- Differential Diagnosis of Meningitis and Influenzal Meningism G. Topolevsky—p. 1370
- Protein Therapy in Whooping Cough and in Measles G. Pontiggia—p. 1373

Uronephrosis Treated by Denervation of Renal Pedicle and Nephropexy—Salleras says that the appearance of repeated attacks of renal colic suggests the occurrence of slight uronephrosis. Pyclography and pycloscopy are of value for the early diagnosis of the condition when the distention of the pelvis and tubules of the kidney with urine is still moderate, thus permitting the performance of an operation by which a reasonably good functioning kidney may be secured. As a conservative operation to return the kidney, the author advises the performance of denervation of the renal pedicle, followed by nephropexy. He obtained good results with the operation in four patients whose ages ranged between 25 and 33 years. The reports and pyclographic observations of these cases are given. The action that denervation of the renal pedicle has on the renal pain is due to the suppression of the periaarterial sympathetic fibers. The fixation of the kidney immediately after the performance of the denervation of the renal pedicle prevents the ptosis of the organ. In cases of abnormal implantation of the ureter in the pelvis, the fixation of the kidney as high as possible corrects the abnormality and provides a drainage of the kidney, which drainage is better than it was before the operation. When slight uronephrosis is caused by the presence of anomalous vessels of small caliber, the ligation of the vessels and liberation of the ureter should precede the denervation of the renal pedicle, which in turn precedes nephropexy.

Efficacy of Commercial Preparations of Anterior Lobe of Hypophysis—Guitarte's article is a preliminary report on the results of his experiments to prove the efficacy of commercial preparations of the anterior lobe of the hypophysis. The author has found hormones of the anterior lobe in the preparations by the administration of which to young rats he has obtained positive and sometimes intense reactions. Freshly prepared extracts from the anterior lobe of the hypophysis should be used because they are subject to a rapid deterioration. The author makes reference to the conflicting opinions in the literature with regard to the merit of pituitary preparations. He states that pituitary preparations, when freshly prepared, prove to have a marked therapeutic action when administered orally, intramuscularly or intravenously to human beings.

Nondiabetic Infantile Glycosuria—Landabure reports the case of a patient, aged 5 years, who since the age of 5 months had had permanent glycosuria that was not modified by the diet or by insulin therapy. The patient had crises of vomiting with acetoneuria at intervals of about three months, which disappeared spontaneously. He developed normally, however, with no symptoms that would indicate a diabetic origin of his glyco-

suria. The author says that, in cases of infantile diabetes, acidosis appears unexpectedly even if constant attention is given to the patients, while in his patient the presence of glycosuria was well tolerated, though the patient never received special care for diabetes because he was not a diabetic patient. His glycosuria was associated with a normal glycemia. There were no disturbances of the gluside metabolism (the test for the diagnosis of hyperglycemia was negative). There was also a diminution of the renal threshold. The clinical and the biologic diagnosis was that of nondiabetic glycosuria or renal diabetes. The author considers the child's condition rare because of the fact that, whereas he has observed more than 2,000 cases of diabetic glycosuria, he has found only 6 cases of nondiabetic glycosuria and while he has observed a total number of 30 glycosuria patients, all of whom were diabetic, the patient spoken of was the first who had a renal glycosuria of nondiabetic origin.

Excision of Presacral Nerve in Dysmenorrhea and in Pelvic Neuralgia—Vila and Viriot say that with the proper selection of cases resection of the presacral nerve is indicated because of its gratifying results in all cases of intractable dysmenorrhea and pelvic neuralgia in which medical treatment fails. The authors resorted to this method in seventeen patients, aged from 17 to 39 years. Disturbances of the bladder or of the rectum were not observed. There were two or three spontaneous micturitions, as well as free elimination of gas since the first day after the operation. Menstruation appeared in all cases two or three days after the operation, regardless of the date of the previous menses. Resection of the presacral nerve (superior hypogastric) was the only operation performed in six cases of essential dysmenorrhea not associated with an organic or genital lesion. There were five recoveries and one failure. The resection of the presacral nerve was associated with an adnexopexy in six cases of sclerotic ovaritis and with some other operations on the genitalia in five cases in which lesions of the genitalia complicated dysmenorrhea. Of the entire group ten patients (58.82 per cent) were cured with complete disappearance of both dysmenorrhea and pelvic pain, three patients (17.65 per cent) showed a marked improvement, while in four patients (23.53 per cent) the treatment failed.

Beitrage zur Klinik der Tuberkulose, Berlin

75 525 806 (Oct. 23) 1930

- *Tuberculosis Prophylaxis with BCG Vaccine A. Nohlen—p. 525
- Röntgen Determination of Position of Cavities in Lung A. Genersich—p. 535
- Types of Chronic Pulmonary Tuberculosis in Rhineland N. Westenhoff—p. 537
- *Course of Tuberculosis Through Generations K. F. Andvord—p. 552
- Tuberculosis Morbidity Among Industrial Workers L. Vajda—p. 564
- Pathologic Anatomy of Tuberculosis in Children H. Kudlich—p. 575
- Pleural Tuberculosis with Large Nodules Case J. Gwerder and L. Kallmar—p. 592
- *Spleen Extract in Treatment of Pulmonary Tuberculosis F. Mattausch—p. 597
- Treatment of Pulmonary Tuberculosis with Nonspecific Lipoids E. Paulsen—p. 605
- *Metal Salt Treatment of Tuberculosis O. Gessner and K. Siebert—p. 609
- Dietary Treatment of Tuberculosis P. Rehfeldt—p. 613
- Value of Complement Fixation Reaction and Serum Lability Reaction in Tuberculosis G. Ivanovics—p. 657
- Dynamics of Nitrogen Metabolism in Tuberculosis S. Leites and D. Eblitsch—p. 662
- Artificial Pneumothorax in Tuberculosis O. Arni—p. 676
- Exudative Pleuritis Clinical Aspect O. Gsell—p. 701
- Pneumothorax Exudate Caused by Mixed Infection Surgical Treatment H. Storz—p. 734
- Pleural and Peritoneal Exudates Sugar Content J. Herms—p. 748
- *Resection of Scalene Muscles as Supplementary Operation in Avulsion of Phrenic Nerve Kochs, Els and Junkersdorf—p. 772

Tuberculosis Prophylaxis with BCG Vaccine—Nohlen describes experiments in which he noted that in monkeys treatment with BCG vaccine did not prevent a subsequent natural infection with virulent tubercle bacilli. The percentage of infections, however, was much higher in animals kept indoors than it was in animals kept in the open air.

Course of Tuberculosis Through Generations—Andvord states that the tuberculosis mortality shows a characteristic highly regular wave movement that during several decades has been on the descent over practically the entire civilized world. In England the decrease in the tuberculosis mortality began in the middle of the nineteenth century whereas in Nor-

way it did not begin until 1885. The decrease progressed from generation to generation since the members of each new generation period seem to have a greater resistance with regard to the tuberculosis toxin than did the members of the preceding period. Each generation has its own definite curve since the degree of infection during the first years of childhood acts as an index for the mortality percentage for the subsequent age periods, a decrease in the tuberculosis mortality during the first years of childhood is followed by a similar decrease from twenty to twenty-five years later in adults.

Spleen Extract in Treatment of Pulmonary Tuberculosis—Matrusch has used spleen extract with success over a period of one and one-half years in the treatment of 140 persons with pulmonary tuberculosis. Roentgenograms of several patients taken before and after the treatment show definite indurative transformation processes. The stabilization of the defense powers of the patients following the ingestion of spleen extract is shown by the disappearance of the deviation to the left and the appearance of lymphocytes and eosinophils in the leukocyte picture.

Metal Salt Treatment of Tuberculosis—Gessner and Siebert report their observations in several large series of experiments on the modification of experimental tuberculosis in guinea-pigs by the parenteral administration of metal salts (manganese chloride and beryllium chloride combined and manganese chloride alone). Although the treatment with metal salts at first showed a transient favorable action on the tuberculosis, larger doses accelerated the course of the disease. It is stated that the results of the experiments are considered not as a refutation of the value of metal salt therapy in experimental tuberculosis in animals but as evidence that in this form of therapy the most important factor is the correct dosage.

Resection of Scalene Muscles as Supplementary Operation in Avulsion of Phrenic Nerve—Kochs et al first describe experiments that they performed on monkeys to study the effects of resection of the scalene muscles. After having demonstrated that the operation was completely harmless they performed it as a supplementary operation to avulsion of the phrenic nerve in twelve persons with unilateral pulmonary tuberculosis. In some of the patients the transverse phrenicotomy incision was used but it was found to be unsatisfactory because it did not give good exposure of the median and posterior scalene muscles. Therefore Sauerbruch's oblique phrenicotomy incision extending from the middle of the posterior edge of the sternocleidomastoid muscle down to the clavicle was adopted. After the phrenic nerve has been exposed and avulsed the anterior scalene muscle is dissected free in order to separate it posteriorly from the nerve plexus and medially from the large blood vessels. The muscle is then divided a short distance above its lower attachment. The retracted stump of the muscle is grasped with forceps and drawn forward, a piece 2 cm long is then resected. Simple division of the muscle gives unsatisfactory results because it is followed by an early connective tissue union of the two ends. The lateral edge of the brachial plexus is then exposed and is carefully drawn anteriorly and medially with a blunt retractor. This exposes the wider median scalene muscle, which is also divided in this step of the operation care must be taken not to divide even the finest nerve fibers that pass over or through the muscle. Particularly in the division of the posterior part is great care necessary in order not to include a part of the plexus in the scissors. Usually the short stump retracts so far posteriorly that there is only a slight possibility of performing resection. The posterior scalene is usually adherent to the median scalene and frequently cannot be separated from it except in cases in which a previous avulsion of the phrenic nerve or pneumothorax treatment has been followed by secondary hypertrophy of the muscle. After all three muscles have been divided or resected there is present a cavity somewhat larger than a pigeon's egg, which is traversed by the plexus. With a careful technique the hemorrhage is minimal and primary closure of the wound can always be performed. Only about fifteen minutes is required for the entire operation and the after treatment presents no difficulties or complications. Just as in all operations that result in a compression of the tuberculosis lung there occurs a moderate increase in tempera-

ture, which, however, lasts only two or three days. The amount of sputum, which is sometimes increased slightly during the first two days following the operation, diminishes rapidly and markedly. In all twelve patients in whom this combined treatment was used the permanent results were excellent and unquestionably better than those obtained with simple avulsions of the phrenic nerve. Moreover, in none of the cases did the authors note defects or disturbances attributable to resection of the scalene muscles. They recommend a trial of this harmless and in some cases markedly beneficial combination of avulsion of the phrenic nerve and resection of the scalene muscles.

Deutsche medizinische Wochenschrift, Berlin

56 1937 2030 (Nov. 21) 1930 Partial Index

- *Treatment of Puerperal Peritonitis H Runge—p 1989
- *Fatal Poisoning Caused by Mushrooms (*Helvella Esculenta*) H Stahr—p 1993
- *Diagnosis of Pulmonary Tuberculosis by Demonstration of Bacilli H Opitz—p 1995
- Agranulocytosis W Nipperdey—p 1997
- Relation Between Diabetes and Trauma W H Veil—p 1999

Treatment of Puerperal Peritonitis—Runge points out that, while formerly many leading authorities advised against surgical treatment in puerperal peritonitis, recently many have recommended it. In consideration of the fact that without operative treatment the mortality rate is almost 100 per cent and that early operation saves many lives, this attitude seems justified. The author discusses the various causes of puerperal peritonitis, and he directs special attention to that form which results when substances with toxic action are introduced into the uterus in order to effect an abortion. He gives the clinical histories of three patients in whom puerperal peritonitis was caused by the injection of soap suds into the uterus. One of these patients, who was operated on twelve hours after the injection, recovered, whereas the other two who came under clinical observation only on the third and the fifth day, respectively, died. From this the author concludes that symptoms of peritonitis after soap suds injections necessitate immediate operative intervention. However, in deciding on the necessity for surgical treatment in puerperal peritonitis one does not have to consider the etiology. The fact that a puerperal peritonitis exists indicates that surgical treatment is necessary. A tabular report shows the great significance of an early operation. Of twelve patients who received surgical treatment during the first twenty-four hours after the manifestation of the symptoms of peritonitis, nine recovered. Of five patients who were operated on during the second twenty-four hours only one recovered and those who received operative treatment later than that all died. In evaluating the various surgical methods the author comes to the conclusion that the supravaginal removal of the uterus and of the ovaries but with conservation of a stump of the portio vaginalis, is the best method. During the after-treatment the circulation and the peristalsis should receive special consideration. Advisable is an intravenous continuous drop infusion of a 5 per cent solution of an invert sugar. In all patients who received surgical treatment and who recovered abscesses developed, which in some instances had a phlegmonous character but which did not greatly retard the healing process. In the conclusion the author stresses that septic abortions should always receive clinical observation because only thus is the early recognition of peritonitis guaranteed, and the opportune time for an operation is not neglected.

Fatal Poisoning Caused by Mushrooms—Stahr reports two cases of poisoning with fatal outcome, resulting from ingestion of mushrooms of the variety of *Gyromitra esculenta* or of *Helvella esculenta*. In both instances the necropsy showed that death was caused by helvella acid poisoning. The author does not accept the hypothesis that the toxicity of *Gyromitra esculenta*, the so called turban-top, varies that in certain localities and at certain times, they are more poisonous than usual. He thinks that they are always poisonous until they are cooked at least five minutes and the cooking water is poured away. The cooking does not destroy the toxic substances but they pass into the water, and this therefore should always be completely removed. The fatal outcome of the cases reported may be due to several factors. It is probable that the mushrooms had not been boiled for a sufficient length of time or that the water had not been completely removed. However the large

quantities of the mushrooms ingested, and constitutional anomalies of the patients, in one case a diseased liver, and in the other case a gastric ulcer, may have aggravated the condition.

New Investigations on Diagnosis of Tuberculosis by Demonstration of Bacilli—Opitz states that although epithelioid and perifocal infiltrations in children are generally thought to be closed forms of pulmonary tuberculosis, tests revealed that the majority of such children excrete bacilli. Among thirty of these patients, between 4 months and 4½ years of age, there were only two in whom the tests gave negative results. To the question as to when an originally open tuberculosis can be considered cured or, at least, closed, the author replies that this can be determined only by the animal experiment, because the examination of the sputum occasionally gives negative results when the animal experiment reveals the presence of bacilli. In discussing the care of such patients who have a closed tuberculosis but who, nevertheless, disseminate bacilli, the author states that they should be cared for in special stations, because they represent a danger for healthy children, but at the same time it would not be right to put them in the same wards with patients who have an open tuberculosis.

Klinische Wochenschrift, Berlin

9 2137 2184 (Nov. 15) 1930

- Histamine Chemical Composition and Clinical Use A. Kupper —p. 2137
- Relation Between Acute Rheumatic Polyarthritis and Focal Infection G. von Conta —p. 2140
- *Copper Therapy of Anemia in Infants E. Schiff, H. Eliasberg and N. Joffe —p. 2144
- *Treatment of Pernicious Anemia with Preparation from Gastric Mucous Membrane N. Henning and G. Steiger —p. 2145
- Presence of Choline and of Choline Ester in Blood H. Bohn —p. 2147
- *Gout in Infant Aged Five Weeks E. Mayer von Schöpfung —p. 2148
- New Method for Biologic Demonstration of Irradiated Ergosterol J. Warkany —p. 2152
- Relation Between Anterior Lobe of Hypophysis and Cancer J. Hoffbauer —p. 2153
- Specific Cutaneous Reaction in Patients with Gonorrhea by Means of Specific Protein-Free Substances W. Casper —p. 2154

Copper Therapy of Anemia in Infants—Schiff et al. reasoned that because Steenbock had obtained favorable results with copper therapy in rats that had been made anemic by feeding them only with cow's milk, copper might likewise be helpful in anemia in infants. Accordingly they instituted copper therapy in four anemic infants. In two of them the anemia accompanied erythrodermia, in one it concurred with pylorospasm and in the fourth with severe visceral syphilis. The nurslings were given twice daily 20 drops of a 1 per cent solution of hydrous copper sulphate, which is equal to about 5 mg. of copper per day. Under the influence of this therapy the blood picture improved steadily in all four cases. The authors conclude that, although the number of cases in which copper therapy proved helpful is still limited, copper has a distinct therapeutic value. They recommend this treatment for further investigation, and they themselves are making observations on anemic premature infants and are conducting experiments.

Treatment of Pernicious Anemia with Preparation from Gastric Mucous Membrane—Henning and Steiger reasoned that if in the normal gastric juice there is a substance which stimulates the formation of blood it must be produced in the gastric mucous membrane. Accordingly they treated patients who had pernicious anemia with a preparation from the gastric mucous membrane of hog stomachs. The preparation was employed in five cases. The patients received daily from 40 to 80 Gm., a quantity equal to the mucosa of one or two stomachs. When given with broth or with applesauce the patients found this form of treatment entirely agreeable. The effect on the blood picture was favorable, the hemoglobin content and the number of erythrocytes increased steadily. Hydrochloric acid alcohol extracts of the mucosa were ineffective. The antineuritic substance was found in the fundus portion as well as in the antrum portion of the mucous membrane. Peptic ferment was detected only in minor quantities in the preparation from the mucosa of the corpus ventriculi and it was entirely missing in the preparation from the mucosa of the antrum. From this it may be concluded that the effect of the stomach preparation is independent of the peptic protein digestion.

Gout in Infant, Aged Five Weeks—Mayer von Schöpfung reports the clinical history of an infant with gout. Subcutaneous tophi were observed by the mother in the third week of life. The infant, who was breast-fed, had vomited since birth after nearly every meal. Because of the constant vomiting a physician was consulted, who thought of pylorospasm and sent the infant to the clinic. There were no signs of pylorospasm. The diagnosis was not clear at first. Considered were multiple abscesses, congenital neoplasm with metastases or tendovaginitis fibrinosa. Treatment was of little avail and the child's condition grew steadily worse. The puncture of a pea-sized tumor on the right ankle joint yielded a snow-white, pasty substance. Following the microscopic examination of this substance, gout was thought of. The tophus growths progressed rapidly and the child died. The author points out that the significance of this case for the gout problem lies in the fact that only endogenous purines formed the uric acid. The predominance of the constitutional pathologic factor is marked. Exogenous influences such as foods, environment and mode of life had no influence on the development of gout in this case. The question as to what causes the retention of uric acid has not become clear. Microscopic examination of the bones revealed neither primary nor secondary inflammatory changes. The kidneys had the characteristics of the gouty contracted kidney. Crystal deposits were present in unusually large amounts and they were predominantly in the interstitial tissues. Tissue necroses were not observed.

Medizinische Klinik, Berlin

26 1695 1734 (Nov. 14) 1930 Partial Index

- Analgesics and Their Combinations E. Hesse —p. 1695
- Present Status of Protective Ferments E. Abderhalden —p. 1696
- *New Aspects of Crusade Against Malaria in Italy C. Schilling —p. 1697
- Anesthesia with Intravenous Administration of Tribrom Ethanol A. Hubscher —p. 1701
- Anguillula Intestinalis Bruckner —p. 1703
- Uteral Prolapse in Child W. Pollak and H. Klement —p. 1704
- Diagnostic Prophylaxis of Renal Calculi H. Pitzner —p. 1704
- Gonorrhea Diagnosis Prevention and Treatment H. Caspari —p. 1707
- Pharmacotherapy of Insomnia K. Freistadt —p. 1709
- Tests for Detection of Bilirubin in Urine F. Reiche —p. 1710

Crusade Against Malaria in Italy—In the first part of the article, Schilling discusses the development of malaria parasites. In discussing the various methods of combating malaria that are employed in Italy, he first mentions quinine therapy. The state distributes quinine among the patients at a low cost. However, the author thinks that supervision is necessary because without supervision many patients discontinue the use of quinine as soon as the fever disappears, and such a therapy is of course incomplete. The mechanical protection, namely, the screening of the houses, is enforced by the Italian railroads. The drainage of marshy districts has also been a great help in combating malaria, and, in order to destroy the mosquito larvae in the canals, gambusias have been introduced into the canals. In shallow waters such as the 'Lago di Trignano' the breeding of mosquitoes is prevented by counteracting the vegetation and by scattering paris green around the edges. The result of all these measures has been that in the malaria areas the mortality rate from malaria has considerably decreased.

Wiener klinische Wochenschrift, Vienna

43 1429 1460 (Nov. 20) 1930

- Treatment of Fractures A. Wittke —p. 1429
- *Role of Liver in Regulation of Tonus of Sympathetic Nervous System Mechanism of Pathogenesis of Icteric Bradycardia D. Danielopolu G. G. Proca and R. Brauner —p. 1432
- *Clinical Determination of Intracranial Trauma in the New Born E. Preissecker —p. 1434
- *Treatment of Trigeminal Neuralgia A. Lux —p. 1435
- Modern Methods of Anesthesia E. Horner —p. 1437
- Idem G. Lotheissen —p. 1438
- Brucella Abortus Infections K. Herman —p. 1438
- Interruption of Pregnancy on Account of Pulmonary Tuberculosis A. V. Frisch —p. 1441

Role of Liver in Regulation of Tonus of Sympathetic Nervous System—Danielopolu et al. state that in a former article they had shown that the liver has the power to retain choline injected into the portal vein or into one of its branches. In this report they describe their further experiments on dogs. First they determined the smallest doses of choline and epinephrine that will produce a circulatory effect when the injection

is given into a peripheral vein, and then the smallest doses that will produce a circulatory effect when the injection is given into the portal vein or into an intestinal vein. Further they studied the action of epinephrine and choline when they were injected into the hepatic artery, into the renal artery or into a peripheral artery. These comparative experiments were made in order to determine whether the action was due to a certain tissue or whether it was a specific action. Finally they injected choline and epinephrine into a peripheral vein, into an intestinal vein and into the portal vein of dogs, which, on the two preceding days, had been given injections with tolylenediamine. The epinephrine and choline injections were given forty eight hours after the first tolylenediamine injection. At this time the dogs already showed icterus and the liver cells showed considerable changes. The authors' observations are summed up as follows: 1. Epinephrine and choline injected into the portal or hepatic veins has a circulatory effect only when the doses are much larger than those which are effective in a peripheral vein. 2. The liver exerts a regulatory influence in that it maintains a fixed humoral medium of substances which influence the sympathetic system. 3. The liver, which has become insufficient as the result of injections of tolylenediamine, loses the capacity for retention of choline and epinephrine. 4. The changes in the sympathetic tonus, which are also noted in the sinus bradycardia during icterus are caused by the insufficiency of the liver that accompanies icterus or, more precisely stated, they are due to a deficiency in the regulatory action of the liver on the tonus of the sympathetic nervous system.

Clinical Determination of Intracranial Trauma in the New-Born—On the basis of the fact that every extravasation in the body causes changes in the serum, Preissecker attempted to detect intracranial traumas by examining the pigment content of the serum. He points out that in the colorimetric investigations consideration should be given to the physiologic hyperbilirubinemia that exists in the new born and that causes a heightened yellow discoloration. In infants with intracranial hemorrhages, however, the serum contains besides this yellow bilirubin pigment, a yellowish brown pigment from a hemoglobin derivative. The author determined the pigmentation of the serum in a number of new born infants in whom intracranial hemorrhage was suspected and also in normal new-born infants. In summing up the results of his tests he says that in a new-born infant with suspected cranial trauma an intracranial hemorrhage may be assumed when the serum shows a decided yellowish brown discoloration, provided, of course, there are no other extravasates such as a cephalematoma. The yellowish-brown pigment from the hemoglobin derivative appears in the serum on the second day; it is most pronounced on the third day, and after that it gradually disappears. In icterus neonatorum there also exists an increase in the bilirubin pigment. However, in this condition the serum has a pure yellow color, and thus it can be differentiated from the yellowish brown pigmentation in case of intracranial hemorrhage.

Treatment of Trigeminal Neuralgia—Lux first criticizes the generally accepted theory of the etiology of trigeminal neuralgia and the methods of treatment, which had been based on this theory. In observing patients during attacks of trigeminal neuralgia he noted a hyperemia of the skin in the region of the trigeminus and an increased perspiration and tear secretion. The patients tried to counteract their pain by pressing and massaging the painful region. It was also observed that in the intervals between the attacks there was neither hyperalgesia of the skin nor pressure pains. From this the author concluded that the phenomenon is due to vascular spasms in the region of the ganglion. He hoped to overcome these spastic conditions by diathermy treatment. Experiments on cadavers convinced him that by applying electrodes to both eyes and to the back of the neck, the entire ganglion and its surroundings could be influenced. When the method was employed on patients it was found that their eyes were extremely sensitive to pressure. But this difficulty was overcome by padding them with cotton that had been saturated with physiologic solution of sodium chloride and by using electrodes of wire netting. The treatment was first employed on two patients during an attack and the results were favorable. During the following five years the author

employed this therapy on about 100 patients. He gives several case reports. The number of treatments necessary differs in each case. In some instances from five to ten treatments were sufficient; in others, as many as between twenty and forty were needed. The author recommends the further investigation of this treatment.

Zeitschrift fur Urologie, Leipzig

24 801 880 1930

- *Tuberculous Nephritis. Clinical Aspect. S. Simon, S. Werboff and W. Cronsfeld—p. 801
- *Nephrolithiasis with Three Thousand Stones. E. Sacharoff—p. 827
- External Orifice of Urethra. Anomalies in Gonorrhea. E. Ssemjenjak—p. 829
- Gonorrhea. Combined Vaccine Treatment and Chemotherapy. N. J. Baschkirzew—p. 843
- Preputial Sac. Endoscopic Examination. L. S. Sirota—p. 851

Tuberculous Nephritis. Clinical Aspect—On the basis of six cases that they observed in children with tuberculous arthritis, Simon et al. discuss the clinical aspect of tuberculous nephritis. The general condition of the patients remained unchanged in those in whom the arthritis was healing, the state of nutrition and the weight and temperature curves were the same as in joint tuberculosis without involvement of the kidneys. In one of the six children there occurred occasionally attacks of pain in the kidney region, which lasted several days. These attacks of pain which necessitated the administration of a narcotic, appeared one and a half years after the first symptoms and were not accompanied by other symptoms, with the exception of an occasional increase in the number of leukocytes, the urine remained unchanged during the attacks of pain. In most of the children the blood pressure was slightly or definitely above normal. In none of the children was the heart enlarged. The speed of erythrocyte sedimentation was the same as that noted in tuberculous arthritis. In all the children the bladder capacity was normal. Cystoscopic examination did not reveal changes in the mucous membrane that could have been considered typical for tuberculosis. The region of the ureters was normal in all the patients but in three of them there was a redness of the neck of the bladder or of the trigon.

Nephrolithiasis with Three Thousand Stones—Sacharoff reports a case of nephrolithiasis in a man aged 33, who had never had attacks of severe pain or disturbances of urination but in whom roentgen examination disclosed a large number of stones in the left kidney. Because of a feeling of heaviness and pain in the region of the kidney it was removed. When the specimen was sectioned it was found that the kidney pelvis was greatly dilated and that the kidney consisted of several cavities that contained a large number of stones of various sizes. The thin walled cystlike projections proved to be the hydronephrotically dilated calyces. The renal parenchyma was preserved in only the upper pole, in the middle part of the kidney and in the lower pole the parenchyma had disappeared completely. In the mucosa of the pelvis and of the dilated calyces there were no signs of inflammation. The total number of stones removed was 3,000 and their weight was 21.5 Gm. All the stones consisted of calcium phosphate. The absence of colic in the uricemia was explained by the fact that a large pelvic stone had blocked the ureteral orifice almost completely and had prevented the passage of small stones through the ureter.

Zentralblatt fur Gynakologie, Leipzig

54 2753 2816 (Nov. 1) 1930

- Internal Secretion of Placenta. E. Philipp—p. 274
- Physiology and Pathology of Sex Hormone. Especially of Hormone of Corpus Luteum. C. Clauberg—p. 2757
- Resistance of Human Ovary to External Injuries. Growth of Ovary Without Fertilization Following Attempted Abortion. J. Granzow—p. 2770
- *Complications Caused by Salpingography. R. S. Hoffmann—p. 2776
- Criticism of So-Called Absolutely Reliable Hemostasis Method of Logothetopoulos. N. Iouros—p. 2781
- Treatment of Trichomonas Colpitis with Salicylic Acid in Crayon Form. M. Rodecort—p. 2784

Complications Caused by Salpingography—Hoffmann gives the history of salpingography and then reviews the literature. He points out that several authors report complications caused by the contrast medium. Then he gives a detailed description of a case in which granulomas remained after salpingography had been done. It was found that the contrast

medium had been retained by the left tube. After mentioning other complications that have been observed after salpingography, the author comes to the conclusion that, especially in cases of sterility, salpingography should not be done. It may cause new infections, a flaring up of old processes or an occlusion of the tubes, or the contrast medium may be retained. It is stressed that insufflation of the uterine tubes does not involve such dangers as salpingography, and that in cases of sterility it gives the same or even better results than salpingography.

Nederlandsch Maandschrift voor Geneeskunde, Leyden

17 189 240 1930

- *Bronchostenosis in Children Resulting from Swollen Hilus Lymph Nodes E. Huizinga—p 189
- Pathology of Uniovular Twin C. de Lange—p 199
- Use of Calmette-Guérin Vaccine J. C. Schippers—p 209
- Immunization Against Diphtheria and Scarlet Fever in Wassenaar Schools H. D. Boer—p 216
- Polio-myelitis Larvata I. J. Peljrk—p 225
- *Encephalitis Following Serious Burns in Child Aged Two Years L. Coenen—p 235

Bronchostenosis in Children Resulting from Swollen Hilus Lymph Nodes—Huizinga describes in children six cases of bronchostenosis resulting from a swelling of the hilus lymph nodes. In all six patients the manifestations began in an acute manner and the patients were sent to the clinic under the suspicion of the presence of a foreign body. The correct diagnosis can often be reached only by bronchoscopy. In two cases an acute lymphadenitis was involved, and in three or four cases tuberculosis was certain. In case of rupture good therapeutic results can often be secured through bronchoscopy, either by the removal of granulations (two cases) or by the elimination of a caseous mass in the more acute stage (two cases). The most common place for the rupture is the point where the trachea merges with the right bronchus.

Encephalitis Following Serious Burns in Child, Aged Two Years—Coenen reports the case of a child, aged less than 3 years, who was seriously burned over his whole body by tipping boiling water over himself. The following day a temperature of 40.5 C (104.9 F) developed, also convulsions. The child (a twin and born prematurely at seven months) lapsed into a comatose state, the eyes became fixed toward the left and Kernig symptoms and stiff neck developed. The burns healed slowly but manifestations pointing to changed conditions in the cortex cerebri and the meninges appeared. The child had had a bad fall three months previously. Encephalitis following burns has rarely been reported in the literature. The earlier cases are cited. How is the encephalitis to be explained? It might be assumed that there was a latent encephalitis and that it was brought out by the burns, but such an assumption would be justified only if several other cases of encephalitis had been reported at that time, but such was not the case, hence, it must doubtless be assumed that the encephalitis developed as a result of the burns. Toxic substances may have formed that induced the encephalitis. The child has not yet recovered sufficiently to recognize his father.

Nederlandsch Tijdschrift voor Geneeskunde, Haarlem

74 5463 5562 (Nov 8) 1930

- Osteomyelitis of Cranial Bones Associated with Infectious Processes of Nose and Accessory Sinuses C. E. Benjamins—p 5466
- Caterpillar Hair Infection of Eye (Ophthalmia Nodosa seu Pseudotuberculosis) Caused by the Caterpillar of *Euproctis Chrysorrhoea* H. Weve—p 5476
- A Record Syringe for Diagnostic Puncture and Aspiration J. de mol van Otterloo—p 5493
- *Ova of *Trichosomoides* as Nuclei of Experimental Stones of Bladder E. C. van Leersum—p 5495
- Treatment of Septic Manifestations with Acriflavine M. van der Reis—p 5498

Ova of *Trichosomoides* as Nuclei of Experimental Stones of Bladder—Van Leersum reports that, in connection with a biologic vitamin A determination in a sample of cod liver oil with phosphorus, some peculiar gritty crystals were found in the bladder of one of the rats. The substance was a calcium salt—in all probability calcium phosphate, of which the concretions commonly consist that one finds so often in the bladder and in the kidneys of rats that are deficient in vitamin A. Some of these crystalline bodies had a nucleus of a brownish color. The colorless crystals, as was to be expected of calcium phos-

phate, dissolved in acetic acid, but the brown nucleus was resistant. On closer examination, certain peculiarities were discovered that led to the assumption that formed elements were involved, probably the ova of a parasite. A more extensive inquiry was instituted, and in seven of the nineteen rats that had served for the test threadlike micro organisms were found in the bladder. Microscopic inspection revealed a large number of eggs that in color and form resembled the objects in the crystalline concretions. Professor Ihle, to whom the preparations were referred, concluded that the organisms belonged to the genus *Trichosomoides* and were likely specimens of *Trichosomoides crassicauda* Railliet. The presence of the eggs in the concretions was doubtless a chance occurrence.

Hospitalstidende, Copenhagen

73 999 1026 (Oct 9) 1930

- *Malaria Treatment of Dementia Paralytica I. Ostenfeld—p 971
- *Amount of Fibrin in Blood After Intramuscular Injection of Sulphur S. A. Holbøll and G. Herborg—p 1018

Malaria Treatment of Dementia Paralytica—Of Ostenfeld's 100 patients treated only by malaria, with an observation time of up to seven years, about one half were influenced to a greater or less degree, 10 per cent with considerable benefit.

Amount of Fibrin in Blood After Intramuscular Injection of Sulphur—Holbøll and Herborg found that an intramuscular injection of sulphur was always followed by an increase in the fibrin in the plasma up to pathologic values, as a rule the quantity was doubled. In the individual, the relation between the increase in the amount of fibrin and the rise in sedimentation was absolutely proportional.

73 1027 1038 (Oct 16) 1930

- *Relation of Leukocytes After Intramuscular Injection of Sulphur S. A. Holbøll and G. Herborg—p 1027
- *Case of Pancreatogenic Steatorrhea J. F. Holst—p 1032

Relation of Leukocytes After Intramuscular Injection of Sulphur—Holbøll and Herborg state that after an intramuscular injection of sulphur there was a considerable increase in the number of leukocytes in the blood, the value frequently rising to more than 20,000, in one case, to 31,000. The rise was in the main parallel to the fever reaction and due exclusively to an increase in the number of polymorphonuclear leukocytes.

Case of Pancreatogenic Steatorrhea—In Holst's patient typical symptoms of diabetes had set in more than ten years previously with the addition several years later of steatorrhea. He says that steatorrheas of various kinds may cause a picture strongly resembling pluriglandular insufficiency. Thrombopenia and polyneuritis, noted in his case and previously described in pancreatogenic steatorrhea, may also occur in steatorrheas of other kinds.

73 1039 1050 (Oct 23) 1930

- Vacuum Steam Autoclave L. E. Walbum—p 1039
- *Pasteurella Infection in Woman After Cat Bite O. Kapel and J. Holm—p 1044

Pasteurella Infection in Woman After Cat Bite—Kapel and Holm report a case of pasteurellosis in which there was local subacute infection with tendency to the formation of degenerating glandular tissue. The source of infection was in all probability through the cat bite.

73 1051 1078 (Oct 30) 1930

- *Effect of Epinephrine on Gastric Secretion K. Roholm—p 1051
- *Differential Diagnostic Significance of Uric Acid Values in Plasma in Patients with Exudative Pleuritis J. A. Frederiksen—p 1059
- *Remarks on Patella Partita A. Rischel—p 1068

Effect of Epinephrine on Gastric Secretion—In ten patients with normal gastric secretion and motility Roholm failed to establish any change in the fasting secretion after the subcutaneous injection of 1 mg of epinephrine.

Significance of Uric Acid Values in Plasma of Patients with Exudative Pleuritis—Frederiksen concludes that increased uric acid values in the plasma in patients with exudative pleuritis strongly support the diagnosis of tuberculous exudative pleuritis.

Remarks on Patella Partita—Six cases of this anomaly with patella divided in two or more parts are reported by Rischel, and the etiology, symptoms, diagnosis and treatment are discussed.

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DIAGNOSIS AND MANAGEMENT OF THE ALLERGIC CHILD*

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My purpose in this paper is to present a method of studying and directing the management of the allergic child from the standpoint of protein hypersensitiveness. Observations in both the experimental and clinical phases of this field have led to certain modifications in practice that may be of interest. I shall not quote extensively from the literature, for that would be foreign to the purpose of this paper.

At the outset, it is necessary to define the term "allergy" as it will be used here. This term was first utilized by Pirquet and Schick to designate an altered reaction of the body to a foreign substance whether purely protein or bacterial in nature. Its meaning in late years has become so broad as to include a large variety of altered reactions, such as those incident to tuberculosis, scarlet fever, rheumatism and other diseases. In the present studies its meaning is limited to specific hypersensitiveness clinically manifested as bronchial asthma, hay-fever, infantile eczema, urticaria and certain gastrointestinal disturbances. Explanations for the allergic state have been sought on other grounds because results have not been entirely satisfactory. I believe that the years will prove, however, that these failures were due to the lack of information in regard to the proteins and their ability to bring about a reaction under certain circumstances, rather than to an error in the original premise that specific protein hypersensitiveness is the cause of allergic conditions.

When a patient is presented for study the first step is to determine in a general manner whether or not the problem to be dealt with is an allergic one. If a history is given of recurrent bronchitis or pneumonia with low pyrexia, or if the child sneezes every morning on awakening or coughs a great deal at night and these conditions are paroxysmal there is a suggestion of respiratory allergy. If a child develops sneezing or coryza in the spring or in August there is a suggestion of hay-fever. If a history can be obtained of infantile eczema or recurrent attacks of urticaria an allergic origin is suggested. Even definite eczemas are not necessarily allergic if they are limited for example to a particular area and never spread to any other part. With a certain amount of experience after obtaining such a general history one can determine with a fair amount of accuracy whether a child is allergic. These general aspects are important for otherwise many cases

might be studied for protein hypersensitiveness only to be rewarded with negative results.

Historical data are of great importance, in some cases, indeed, the treatment is largely dependent on information that can be gleaned from the history. As I shall have occasion to reiterate many times, knowledge in this field is comparatively limited, and the process must of necessity be empiric. To be of any assistance, then the history must be most comprehensive. I shall consider it from various angles.

FACTORS IN DIAGNOSIS

Family History—Material gathered from family histories is not strictly of importance in the individual case but has been utilized in the discussion of the still moot question as to whether allergy is an hereditary disease or whether there exists in certain individuals a predisposition to the acquisition of protein hypersensitiveness which may be compared with the present attitude toward tuberculosis.

Therefore, if one is interested in this phase, there are just a few precautions to note. It is difficult to gather precise information when taking a family history. The physician's mind should be unbiased and he should exercise care not to force information that will suit his own views, for it is a simple matter to shape questions that will draw equivocal answers.

Specific History of the Child—All the factors attendant on the onset of the disease should be inquired into carefully for example the inquiry should be directed as to the places the patient visits the first ingestion of certain foods, the introduction of new bedding, or contact with certain animal pets, which all present suggestive data. With asthma the occurrence of attacks at night may indicate a relation to the bedroom, occurrence in the daytime shortly after a meal may indicate a relation to foods or it may be a combination of food and some external cause. It is also helpful to get an exact description of the most recent attack and all of the surrounding circumstances.

With eczema and urticaria a general idea of the occurrence of the attacks must also be obtained whether they occur at night or during the day is important for it is known that although eczema and urticaria as a rule are due to the ingestion of foods nevertheless an individual might have eczema or hives from external causes—as opposed to foods ingested. A striking case is that of a child who suffered from frequent attacks of angioneurotic edema and papular urticaria yet was found negative to all available protein tests but gave definite reactions to extracts of his pillows and mattress. Further inquiry revealed that his attacks of edema occurred before breakfast and his itching was most pronounced at night. Removal of his pillows and mattress resulted in a complete cessation of the symptoms. One year has elapsed since this observation.

* This work is being carried on under the Crane Fund for the Study of Allergic Diseases in Children.
From the Departments of Pediatrics and Immunology, University and Bellevue Hospital Medical College, New York University and Sydenham Hospital.

Relation of Antepartum Period to Sensitization—It has been demonstrated¹ that it is possible to sensitize actively a guinea-pig fetus in utero. With this factual evidence in hand I² later showed that there is a causal relationship in the human subject between the antepartum diet and the sensitization of a human fetus in utero. This has been traced to the excessive indulgence in particular proteins as a result of peculiar cravings which certain pregnant women have. This hypothesis may be offered as a possible explanation for the instances of children who, taking a certain food for the first time, develop an immediate anaphylactic reaction in the form of urticaria, eczema or other manifestations. Hence it is of importance to inquire carefully to the antepartum diet, for here one may find the cause of the allergic state in certain children which may easily correct in early case of eczema or hives. Such evidence must, of course, be corroborated by skin tests. In testing such cases one sometimes discovers potential sensitizations which have been established before birth, to foods with which the child has not yet come in contact. I do not mean to indicate that such an indulgence causes an allergic condition in each instance, for even in guinea-pigs it is impossible to bring about sensitization in each animal. What fundamentally predisposes an individual to the acquisition of sensitization—whether a human being or an animal—has not yet been discovered. I have not at any time suggested that this is the sole manner in which sensitization is acquired. I do suggest, however, that this is one possible way in which a fetus having such a susceptibility may acquire its original sensitization evidenced after birth on first contact.

Environment—Environmental conditions may also be causative factors in establishing a hypersensitive condition. It has been shown experimentally³ that guinea-pigs may be sensitized by the direct inhalation of antigenic dusts. As has been described in the paper of Figley and Elrod,⁴ castor bean dust, emitted by a castor oil factory, was the direct cause of a large number of cases of asthma in that district. Proximity to stables, chicken farms and other such dusty environments might also be the cause of allergic conditions.

The occupation of the parents may occasionally reveal the cause of the allergy in the child. This was demonstrated in a study on rabbit hair asthma.⁵ No rabbit hair could be found in the home of a child sensitive to this substance. The only possible clue was that the father worked in a felt hat factory. On further investigation, it was found that felt is manufactured from rabbit hair. In the process of his work, particles gathered on his clothing and person. The relationship was specifically proved when the child reacted positively to a skin test done with dust taken from the cuff of the father's trousers.

Another instance in which the parent's occupation was the offending cause was that of a butcher whose child was sensitive to various meats. The eczema of

the face was traced to the father's kisses. The father had a large moustache which he was in the habit of stroking when his hands were soiled from the handling of meats. After this situation was discovered and the father was instructed to clean his moustache and hands thoroughly before returning home, the child's eczema disappeared.

The home should be investigated for the detection and analysis of all dust-producing articles. It is curious how little people can or will tell about their homes, particularly with reference to objects that are likely to cause trouble. Bed clothes, furniture, floor coverings, decorations of all kinds, toys, personal clothing, pets, rodents, insects and insecticides have all been found to be causative agents in producing this condition.

In other words, since this is a branch of medicine which is still far from perfected, it is necessary to seek as much aid as possible from the history of the patient. After this has been ascertained, it is time to proceed with the skin tests.

THE SKIN TEST

The whole question of the proteins that are used in the skin test is one that requires much inquiry, proteins have not been standardized and it is possible that one is dealing with inactive proteins, on the other hand, reactions are obtained that are occasionally proved nonspecific, the number of proteins is still limited, although the number available has increased remarkably. Furthermore, in my experience, I have found patients who have not reacted to stock proteins—feathers for instance—but who do react to an extract from feathers out of their own pillows. Another most interesting example of this was recited to me by a dealer in ostrich feathers who reacted to feathers from one locality but not of another. These are all factors of which one must be cognizant, and which will make people less hasty to condemn the lack of success in individual cases studied in this manner. Therefore I reiterate that unless there are available protein extracts of all substances with which an individual is likely to come in contact, in the form of comestibles or environmental factors it is necessary to seek aid from the history in addition to what can be learned from the actual skin tests.

There are two major methods of doing the skin test, the scratch method and the intradermal method. The latter method is the intradermal injection of a protein solution. The scratch test is performed by applying to a scratch in the skin a drop of tenth normal sodium hydroxide in which is dissolved a minute amount of dry protein.

In favor of the intradermal method, the argument has been advanced that it is more sensitive than the scratch method, especially in cases in which the skin is not readily reactive. However, this argument may be used as well in its disfavor, because certain skins may react too readily, in which event the interpretations are difficult to make and therefore require wide experience and exceptional judgment. Furthermore, there have been reported violent reactions and even deaths from the use of the intradermal injections in patients that are exquisitely sensitive. The method is painful, time-consuming and difficult to perform on a resistant child. Since its results do not offer a greater degree of reliability, it seems to present a greater number of disadvantages than advantages.

The scratch method is simpler to perform and is not painful. A slight scratch—several millimeters—is made

¹ Ratner, Bret, Jackson, H. C. and Gruehl, H. L. Transmission of Protein Hypersensitivity from Mother to Offspring. V. Active Sensitization in Utero. *J. Immunol.* 14: 303 (Nov.) 1927.

² Ratner, Bret, A Possible Causal Factor of Food Allergy in Certain Infants. *Am. J. Dis. Child.* 36: 277 (Aug.) 1928.

³ Ratner, Bret, Jackson, H. C. and Gruehl, H. L. Respiratory Anaphylaxis. Sensitization Shock, Bronchial Asthma and Death Induced in the Guinea Pig by the Nasal Inhalation of Dry Horse Dander. *Am. J. Dis. Child.* 34: 23 (July) 1927. Ratner, Bret and Gruehl, H. L. Respiratory Anaphylaxis (Asthma) and Rein Poisoning Induced with Castor Bean Dust. *Am. J. Hyg.* 10: 236 (July) 1929.

⁴ Figley, K. D. and Elrod, R. H. Endemic Asthma Due to Castor Bean Dust. *J. A. M. A.* 90: 79 (Jan. 14) 1928.

⁵ Ratner, Bret, Rabbit Hair Asthma in Children. *Am. J. Dis. Child.* 24: 346 (Sept.) 1922.

on the skin with a Hagedorn needle. Greatest precaution must be taken to prevent trauma, since the drawing of blood tends to prevent the dissolved protein from entering the lymphatics. If the solvent dries before the protein is completely dissolved, additional sodium hydroxide is applied and care must be taken not to traumatize or irritate the skin at the point where the protein is being dissolved. The protein may be applied and dissolved readily by means of a flat toothpick. It may seem needless to call attention to the fact that test material must be carefully labeled—both bottles and stoppers—to obviate any interchange, and that a fresh applicator must be used for each test.

It is essential in doing the scratch test to have the numerical scratches so arranged that it is impossible to read falsely any given test. In order to accomplish this, as a rule, the number of scratches done at a given time is always continued in the same order, that is, if five tests are done horizontally, a series of five is carried throughout the ensuing tests.

The accurate numbering and labeling of each test therefore is of utmost importance.

Skin Reaction—The skin reaction varies in intensity in different individuals. If a particular skin is highly reactive, a small wheal will be of little consequence and a positive reaction must necessarily be a typical wheal with definite pseudopods.

In a skin that is nonreactive, just as much care must be taken in the interpretation of the skin reaction, for here even a small wheal of a few millimeters may definitely be regarded as positive. Persistent erythema is often to be regarded as positive.⁶ However, in such instances the test must be most carefully controlled and only after repeated corroboration may it be regarded as positive.

Locality of the Skin Test—Certain areas of the body have been designated as most reactive—the bend of the elbow, for example—and it has therefore been advised that the tests be performed at that point.

In the early days of my work, I noted that the particular area of the body on which the skin test is performed does definitely affect the reaction. If the same protein is tested in as many as thirty different parts of the body there will be all gradations of reactions elicited, from a negative to a definitely positive one. Even so slight a distance as 2 cm from one scratch to another might give different reactions. My results, therefore, have led to the conclusion that individuals differ markedly, and there is no particular part of the body that is specifically more sensitive in all individuals.

Recently Alexander,⁷ working with the intracutaneous method, reported that he similarly has found such a marked variability of sensitive skin areas and that a test might be negative in one area and positive in another. This irregularity of the skin receptivity therefore holds for the intracutaneous and scratch methods.

Suggestive reactions should be repeated in various parts of the body and a responsive area may be found on which more positive results can be obtained.

The Skin-Negative Type—There are undoubtedly many patients who are sensitive who do not give a skin reaction. In general this type of case can be diagnosed only by careful clinical investigation and then not too exactly. A special type of nonallergic skin was pointed

out by Schloss,⁸ O'Keefe,⁹ and others in the instance of a child who has intestinal allergy.

A number of years ago, I obtained the following data, which add concrete evidence in clinical form for the assumption that intestinal cases do not always react with positive skin tests. A pair of twins that I had occasion to study were weaned from the breast and put on a milk formula. One twin developed urticaria and the other vomited and had diarrhea. The child that developed urticaria gave a positive skin reaction to milk, beef, beef serum and egg. The other twin persistently gave negative reactions to all proteins over a period of many months of intensive study. Tests were repeated in as many as twenty different parts of the body but the results were always negative. However, clinical evidence for the sensitivity of this child, despite the negative skin reactions, was obtained when egg and beef juice were given, which caused vomiting and diarrhea.

Thus I believe that there is in infancy a gastrointestinal disturbance which is specifically allergic but that in such cases skin tests give negative results. I could cite more cases but none so specifically controlled as that of the twins.

Two other methods for doing skin tests might be mentioned. One method is that of Bloch,¹⁰ in which the test substance is applied directly to the intact skin, the area of application being covered with a piece of linen held in place with adhesive tape. The skin reaction is observed from twenty-four to forty-eight hours later, a positive reaction producing definite redness and swelling.

The other method of importance is that introduced by Matthew Walzer,¹¹ which is a modification of the Prausnitz-Kustner method. Blood is drawn from the sensitive child. The blood serum is then injected into the normal skin of the parent, and then the regular protein tests are done at these sites of injection. Positive reactions may be obtained in the normal individual as a result of this passive transfer.

Both of these methods are, I believe, of great importance for experimental investigations. They are limited, however, in their general usefulness and cannot supplant the scratch and intradermal methods.

Summary of Skin Testing—Skin testing cannot be regarded superficially as a simple procedure. A scratch and a bit of protein do not solve the problem. It is an arduously detailed procedure which must be carefully controlled. One must always bear in mind individual variability and the interpretation must be the result of careful weighing of many factors. Despite the limitations, the protein skin test is a method that compares favorably with other diagnostic procedures, such as roentgenograms, Wassermann tests and agglutinin tests, provided it is intelligently interpreted and caution that applies also to the other methods named.

Complete Diagnostic Procedure—Every case is studied with all the available proteins, numbering about 300, extracts of all substances creating dust in the home are used for testing as well as occupational substances that might be brought into the home.

In addition, a complete chemical examination of the blood, cytologic study of the blood, roentgenograms of

⁸ Schloss, O. M. Allergy in Infants and Children. *Am J Dis Child* 19: 433 (May) 1920.

⁹ O'Keefe, E. S. Protein Sensitivity in Children with Negative Cutaneous Response. *J. A. M. A.* 80: 1120 (April 21) 1923.

¹⁰ Bloch, Bruno. The Role of Idiosyncrasy and Allergy in Dermatology. *Arch Dermat & Syph* 19: 175 (Feb.) 1929.

¹¹ Walzer, Matthew. Studies in Absorption of Undigested Proteins in Human Beings. Simple Direct Method of Studying Absorption of Undigested Proteins. *J Immunol* 11: 147 (Sept.) 1927.

⁶ Shannon, W. R. Cutaneous Reaction in Allergic Diseases of Infancy and Childhood. *Arch Pediat* 41: 834 (Dec.) 1925.

⁷ Alexander, H. L. Variability in Distribution of Allergic Skin Response. *Proc Soc Exper Biol & Med* 25: 800 (June) 1928.

the sinuses and chest, Schick Dick and Mantoux tests, and urinalysis are performed. These procedures rule out any secondary factors that may enter into a proper evaluation of a case, such as foreign bodies in the lungs, mediastinal tumors, tuberculosis, metabolic diseases or infections. Thus a nonspecific is coupled with a specific diagnostic procedure.

MANAGEMENT

Elimination—As far as possible I attempt to verify the accuracy of the diagnosis by the elimination of the offending substance or substances. During this strict elimination period many complexities arise, for example, despite careful instructions, egg-containing foods may unknowingly be given to a child who is sensitive to egg. It is not enough to eliminate eggs as such, but one must also eliminate French ice cream, cake, pastry, noodles, icings, and all other foods in which eggs are used. To show how difficult is complete elimination, the following case may be cited. A mother had a child suffering from eczema. This child was sensitive to both wheat and eggs and these substances were eliminated from the diet. For many months the child was free from eczema but recently there had been a moderate recurrence. When the mother was questioned, it was discovered that she had been giving the child Ovaltine, which contains egg. In another egg case it was found that the child ate orange ice, which was later learned to contain raw egg white. And so there are cases of children sensitive to cottonseed who get cottonseed as an adulterant in olive oil, bonbons and other foods, or to nuts which are used in nut pastes and in cookies and cakes, and are not in evidence on inspection.

With asthma due to certain dusts and keratins, it is not sufficient to tell the mother of such a sensitive child to get rid of the substances. It is absolutely necessary to make a thorough canvass of every stuffed article in the house. Instances can be cited of children who had their feather pillows replaced by silk floss or horse-hair. Other beds in the same room or pillows stored in the closets, were found to contain an abundant supply of these substances. The parent of a child who had asthma and was a perennial sneezer insisted that she had completely gotten rid of all feathers in the room and was somewhat obstructive to an investigation of the child's quarters. However, there were found two very small pillows filled with feathers that the boy used on his chair. The elimination of these eradicated his perennial sneezing and asthma. And so with rabbit hair, I had a case of a rabbit hair pillow that was kept in a store room and used on occasions when the child played on the floor.

It is impossible to go into further detail here. It is, however, strongly urged that no stone be left unturned to accomplish the complete eradication of known factors, for only in this way can one be certain that the cause or causes of the child's allergic condition have actually been determined.

Further diagnostic evidence is obtained when specific instances of partaking of an offending substance inadvertently produces an attack or return of the hives or eczema. These instances are clinical proof of the specificity of the inciting factor.

Denaturation of Foods—The elimination of essential foods is something that might result in serious nutritional difficulty. In some cases I have been successful in utilizing these in denaturated form accomplished by the simple process of prolonged heating. For

example, if a child is sensitive to egg white, eggs that are boiled for thirty minutes are often tolerated. With milk, I have found that children sensitive to lactalbumin are almost universally tolerant of evaporated milk. Children have been kept on evaporated milk for as long as a year until tolerance to raw cow's milk could be established.

Spontaneous Desensitization—This type of desensitization is one of great interest. By spontaneous desensitization is meant the instance of the child who because of an intolerance to a particular food, refuses it or vomits it. Only minute amounts of this food will get into his diet, therefore, and in this way a tolerance will be developed. There are many cases of food idiosyncrasy in which this particular natural desensitization occurs particularly with milk and wheat. However, it is never certain in which case this will occur for food intolerance may persist for many years without any spontaneous desensitization and the child will continue to get worse and worse.

Specific Desensitization by Mouth—With foods of a common variety, it is necessary that an increased or complete tolerance be established. Specific desensitization may be brought about by giving carefully graded amounts of the offending substance every day. This is accomplished by carefully regulating the amount of food to be given. For example, if the child is sensitive to milk drop doses or even fractions of a drop, of raw milk are given each day, the dose being gradually increased.

If the child is sensitive to more than one food, the foods may be combined in doses each day, and thus given to the child until tolerance is established.

Desensitization by Injection—Diluted proteins are injected subcutaneously in minute doses, the injection of a dilution being always less than the point of reactivity. For example if a child reacts to a dilution of 1:1,000, the injection of the protein solution should start with a dilution of 1:10,000, in exactly the same manner as with the present treatment of hay-fever.

The injections are given cautiously and the increase in dosage is very carefully guarded. As one proceeds with this method one realizes that a reaction at a certain point indicates that no further increase in dosage should be made until the child no longer shows a reaction to that amount.

The choice of the proper method of treatment for a given case must be guided by the individual peculiarities of each patient.

In the case of simple food sensitization in infancy, the best method is elimination plus oral desensitization. An example of this is the case of a child who at 10 months showed a hypersensitiveness to egg. Eggs in all form were eliminated. For a period of two years raw egg white in increasing drop doses was given, and egg-containing foods were gradually introduced. This child has apparently become desensitized, for at present, and she is 10 years old, she is able to take egg-containing foods without difficulty and is skin negative to egg protein.

On the other hand, a patient came to me at 8 years of age suffering from severe asthma and eczema. This boy was found sensitive to milk and egg. In addition to strict elimination I started desensitizing him by subcutaneous injection with milk and egg proteins. This choice was made on account of the severity of the condition and the prolonged duration of the ailment. After a period of four and a half months his tolerance had reached a point at which he could take small

amounts of these foods. He became skin negative and has remained so to milk and egg over a period of ten years. Six years ago he developed a moderate hypersensitiveness to horse dander after a visit to a farm. Absence of contact with horses has made this factor one of minor importance. During the past year he developed a slight eczema of the face which was due to a new hypersensitiveness which he appears to have developed to wheat and fish, this was easily controlled. He has remained free from asthmatic attacks. It is evident that there is no royal road to any cut and dried cure; one must proceed with these cases always prepared to analyze factors that might be at work.

Severe multiple sensitization is the most baffling form of allergy, and it is futile to hope for any beneficent results to accrue from desensitization. It is necessary to start by rigid elimination of all offending substances, denatured forms of essential foods must be substituted in order to maintain proper nutritional balance. Then gradually attempts may be made to desensitize to one factor after another. This may be exemplified by a child sensitive to at least a dozen foods and several keratins. After painstaking elimination, which required the most complete cooperation of a very intelligent mother, attacks were minimized and for the past four years this patient has been free from all attacks. During these years foods were gradually introduced and increases very slowly made. As I retested the boy very after year, I have found that he became spontaneously desensitized to certain foods such as milk and wheat. After this child had been under my care for seven years, I undertook oral desensitization to other foods to which he was still sensitive, by administering a prepared pellet containing a very minute amount of such foods.

With a case of cottonseed asthma, which I first saw three years ago, the complete elimination of cottonseed—found in mattresses, pillows and overstuffed furniture and cottonseed oil with which the child came in contact through his foods—produced a complete cessation of all attacks for two years. In the third year, since the child still reacted to this protein, I undertook desensitization by injection.

Additional cases observed over a period of years could be cited, but they would not further my purpose. The same specific measures must be applied to the easily handled single sensitivity case and to that of difficult multiple sensitivity. Although the procedure is a complicated one and success difficult to attain it appears to me that much harm is being done by the too frequent resort to nonspecific measures in the hope of making a short cut to a cure.

CONCLUSIONS

A child suffering from the so-called allergic syndromes of asthma, eczema, urticaria and hay-fever must be viewed from the standpoint of protein hypersensitiveness.

A carefully taken and thoroughly analyzed history is essential. This should include not only the history of a typical attack in its relation to foods, contact with animals, season of the year, time of occurrence and locality, but also a broad and general history of the case as a whole.

In addition to the history, a complete physical examination and laboratory tests such as chemical examination of the blood, cytologic studies and roentgenograms should be made and from 300 to 400 protein skin tests performed on each child by the scratch method.

I believe that etiologic factors such as sensitization in utero, sensitization by passage of antigen through the intestinal tract, and sensitization through inhalation of antigenic dusts are of paramount importance.

The management of the allergic child and a study of its progress under the careful regimen described here presents evidence that specific protein hypersensitiveness is as basically important to allergy as the tubercle bacillus is to tuberculosis.

One hesitates to extol the virtues of so complex and still immature a subject as allergy, but an analysis of cases studied over a period of years, I believe, sanctions this presentation as a sound therapeutic procedure.

515 West End Avenue

ACUTE TRANSIENT EPIPHYSITIS OF THE HIP JOINT*

O. L. MILLER, M.D.

CHARLOTTE, N. C.

There is a disease of the hip incident to childhood, which, in view of the frequency of its occurrence, is not given as much textbook emphasis or as much detailed description in collateral writings as it deserves. To distinguish it from acute septic epiphysitis, or septic hip, this condition should be termed acute transient epiphysitis. The clinical course of the latter differs so decidedly from that of the former that I believe it should be recognized as an entity with its own classification. Certainly, a different method of clinical management is indicated.

Much emphasis has been given to destructive septic epiphysitis of the hip, no doubt owing to the fact that it is attended by profound illness and prone to be followed by permanent disability and deformity. Acute transient epiphysitis of the hip as described here causes a child to be sick, creates temporary or permanent deformity depending on the management, and is of a proportionately high incidence. It is not however dangerous to life, nor is serious disability likely to follow its occurrence if the cause of the infection is promptly removed.

My interest in this disease was occasioned by dissatisfaction over the use of the term "acute arthritis" and by a desire for a somewhat more definite diagnosis in certain cases of hip-joint complaint in children. After more careful study of the roentgenograms of the neck of the femur near the epiphyseal line in the so-called acute arthritic hips in children, a rather constant disturbance in bone texture was seen. After noting the clinical course in a number of these patients and following changes about the hip by roentgenogram, I now question very much whether there occurs a primary infectious arthritis of the hip joint in children, beginning within the joint space itself.

The upper femoral epiphysis is a point of unusual physiologic activity and physical stress. The blood is supplied to this area by means of minute, looped vessels passing through a vigorous bone growing center. The hip joint with its multiple motions in an active child is more than ordinarily susceptible to trauma. The character of the blood supply, then, plus even slight trauma invites infectious infarcts or pyemic plugs into this epiphysis with consequent disease.

* Read before the Section on Orthopedic Surgery at the Eighty First Annual Session of the American Medical Association, Detroit, June 27, 1930.

There is now universal interest in more accurate differential diagnosis of the various hip-joint complaints and it becomes an increasing comfort to be able to place each disease or disorder of this joint more promptly into the category to which it belongs. Doing this allows a reasonably accurate prognosis, determines a more or less fixed course of clinical management and gives relief to the physician and the family, if that specter, the tuberculous hip, can be ruled out.

Acute transient epiphysitis of the hip has its highest incidence before 10 years of age. It attacks children who are vigorous and active, and there is little or no prodromal period of indisposition or declining health. Symptoms localize rather promptly to the hip joint and there is sharp muscle spasm, flexion deformity and guarding of the area. Some fulness in the structures about the joint occurs, depending on the extent and virulence of infection and on the amount of exudate in the joint in a particular case. Some of the children complain vaguely for a time and continue ambulatory, others are quite sick when first seen and are unable to bear weight on the affected limb.

Over a period of eight years at the North Carolina Orthopedic Hospital, admissions for various hip diseases were recorded in about the following ratio: tuberculosis, 45 per cent, Legg's disease, 11 per cent, coxa vara of adolescence (admission age limit to the hospital

admission to the hospital was seven weeks. The average admission temperature was slightly more than 100 F., and elevation of temperature was noticed for five weeks. The average leukocyte count on admission was 15,000, with polymorphonuclear cells 81 per cent. The average time of duration of any symptoms, local or general, after admission to the hospital was six weeks. The right hip was found infected in twenty-four cases,

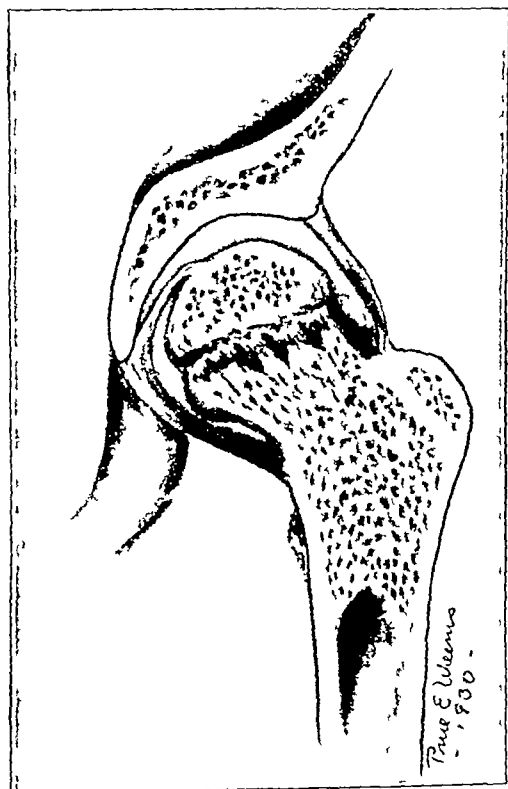


Fig. 1—Multiple small abscesses on metaphyseal side of epiphyseal line mild joint reaction

is 14 years), 4 per cent, acute septic epiphysitis, 12 per cent, and acute transient epiphysitis, 28 per cent. These figures show the comparatively high incidence of the last named disease in an average clinic or practice.

The observations in this paper are based on a study of seventy-seven cases of acute transient epiphysitis of the hip. The average age of the patients has been $7\frac{1}{2}$ years. The average duration of the symptoms before

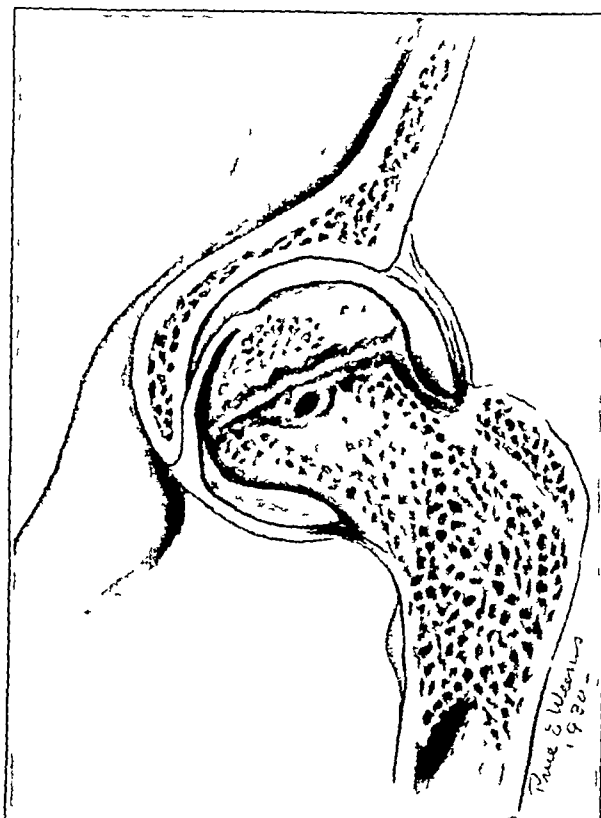


Fig. 2—Central abscess at epiphyseal line with moderate amount of destruction and joint reaction

the left hip in twenty-four cases, and both hips in three patients. The disease occurs more frequently in males than in females, about 2 to 1.

A definite focus of infection was found in practically every case. One child had a sore on the foot which seemed to be a source of infectious metastasis, and several children had recently had some of the infectious diseases of childhood, but the chief source of infection was found to be the tonsil. Early remission of symptoms followed tonsillectomy in 82 per cent of the patients.

A simple transient epiphysitis should be suspected in a child presented with a comparatively slow developing hip complaint, with the local and general symptoms outlined, when he has diseased tonsils or some other outstanding focus of infection or has recently had one of the infectious diseases. There may be an occasional history of intermittent attacks of lameness in a hardy child before his family considers him sick enough to demand hospital care.

The roentgenogram in this disease is not altogether diagnostic. On first examination in some of the cases of this series, the roentgenograms were interpreted as being negative. In the same cases, a few days later, enough absorption had taken place along the epiphyseal line to allow a reading of destructive change in the bone.

texture and sufficient exudate had accumulated to alter the joint outline. This change in mild cases is not outstanding, in others it is very definite. With small infected infarcts lodging near the epiphyseal line, the amount of destruction resulting depends on the factors of virulence, resistance and protection. Roentgenograms may show a localized abscess or absorption all along the metaphyseal aspect of the epiphyseal line. An abscess may develop, showing lines of absorption down into the neck of the femur, and in one case it tracked to and involved the trochanteric epiphysis. Sometimes the abscess forms on the epiphyseal side of the epiphyseal line and burrows through the head toward the joint. A certain amount of exudate and reaction are present, showing thickening of the overlying joint structures.

Treatment in these cases consisted of rest in bed, traction to overcome muscle spasm and deformity, and removal of infectious foci. The average period in traction for the hospital cases was five weeks. When joint symptoms cleared up, no further restriction was remained well.

placed on the child and weight bearing was soon resumed. The patients treated have been followed a sufficient length of time to determine that they have

No appreciable difference in the length of the legs has been noted and the hips have recovered with normal function. A hip requiring drainage should not be classified as transient epiphysitis.

SUMMARY

Acute transient epiphysitis is a common cause of hip complaint in children. It is usually provoked by mild

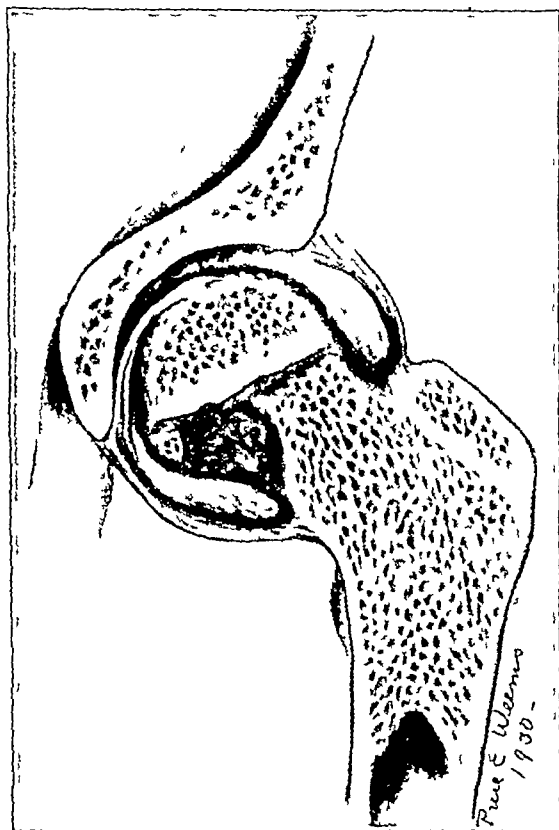


Fig 3—Abscess inner aspect of neck of femur at the epiphyseal line with considerable destruction of bone and joint reaction.

Checking these hips by roentgenograms in follow-up work showed the femoral heads becoming a little more gross in appearance as compared with the normal, and the neck slightly thicker and broader. The head shows an increased superior-inferior diameter, particularly in the outer aspect. This gives one the impression of growth stimulation by low grade infection near a growing center.

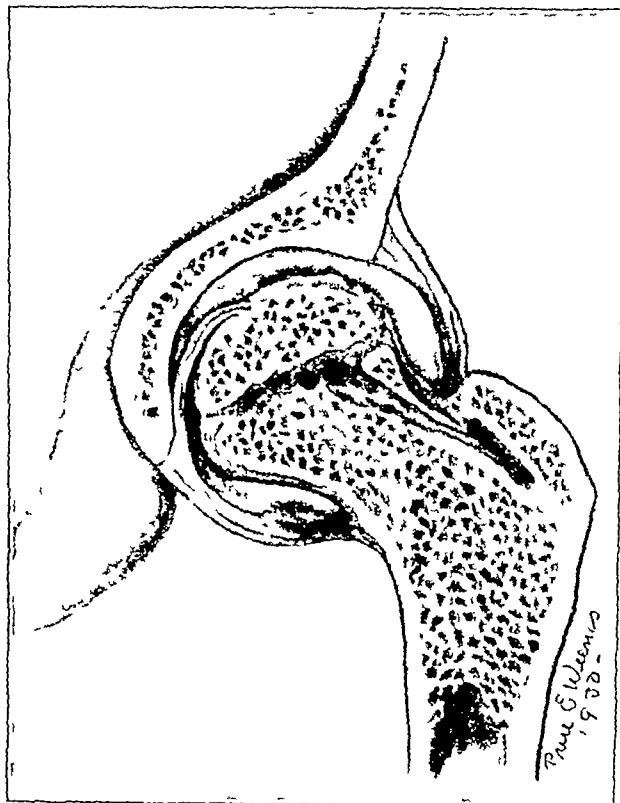


Fig 4—Abscess formation outer aspect of neck of femur at epiphyseal line with joint reaction and infection tracking to trochanteric epiphysis.

trauma. It may be suspected in a child complaining of pain about the hip if he has diseased tonsils or has recently had an acute infectious disease. Eighty per cent of my cases were associated with diseased tonsils.

Carefully made roentgenograms will show small abscess formation and absorption about the epiphyseal line.

The treatment consists of the removal of infectious foci, rest from weight bearing, and traction on the lame limb.

Duration of the disease is from a few weeks to a few months and if prompt treatment is instituted, children recover without any disturbing changes in the hip joint.

15 West Seventh Street

ABSTRACT OF DISCUSSION

Dr. PHILIP LEWIN, Chicago. It is probable that many of these cases have been overlooked principally because they have not been looked for. Dr. Miller has been looking for them and has found seventy-seven cases. When one considers his figures of all hip cases examined during this period, acute transient epiphysitis occurring in 28 per cent, one may be certain that many are being overlooked. The profession is indebted to Dr. Miller for a term that will take out of the large classification of hip conditions a certain definite condition and put it in its own little 'cubbyhole.' In every branch of medicine this is an

evidence of progress. I want to emphasize a few points that I believe deserve discussion. The first point is the necessity of a careful history, the second, the importance of a complete examination, and the third, the examination of the roentgenograms. One should especially examine the epiphyseal line, both sides of this line, particularly the diaphyseal side of the epiphyseal line, where most pathologic changes occurred in Dr. Miller's cases, although in a few cases it was found on the epiphyseal side. If more roentgenograms were examined with this region in view and with a magnifying glass, I think many would be discovered. It seems that there is an analogy here between acute transient epiphysitis and osteomyelitis, which as every one knows, in the early roentgenograms is usually negative and in these cases, most of which were seen by Dr. Miller at the end of five, six or seven weeks the same was true. From Dr. Miller's diagrams, which are excellent especially for teaching, it seems as though the location of these infected emboli, whether they come from the tonsils, as seems evident from his statistics or not, seem to go a little bit farther than those which produce osteomyelitis. Laboratory studies are important, as are special tests such as the tuberculin tests. Dr. Miller didn't tell the incidence of the positive or negative tuberculin tests, and of the Wassermann tests. He emphasized the fact that the child should be treated by recumbency in bed with traction as well as the eradication of foci of infection. I should like to ask Dr. Miller to tell in closing what was the incidence of positive tuberculin tests in the seventy-seven cases, what was the percentage of the positive fabere sign which is said to be a definite test for hip conditions, and, thirdly, what is the prognostic value of the fabere test during treatment?

DR CHARLES W. PEABODY, Detroit. It is my idea that something probably of great value is being added by Dr. Miller to the knowledge and classification of disturbances of the hip joint in children. In some ways the paper is a little difficult to discuss because it contains or tends toward a somewhat speculative or theoretical point of view and resolves itself, I think, into two propositions. One is that there is a clinical entity representing an inflammatory process in the hip which is localized in the epiphysis, with a gradual onset, which does not go on to necrosis or suppuration and which recovers under conservative treatment with some growth disturbance, but sometimes the roentgenograms show a normal condition. His illustrations bring a good deal of supportive evidence to that proposition. I am sure that I have seen a number of hips with a subacute onset, that I strongly suspected of being tuberculous, that had something just a little queer about the appearance of the head or neck of the femur along the epiphyseal line but didn't seem at the early stage to justify exploration, and on the giving of a trial of conservative therapy, cleared up rather rapidly and permanently instead of relapsing as they probably would have, had they been tuberculous, and did not go on to more high grade inflammatory condition. The other proposition in his paper is this: An absence in the hip joint of any nontuberculous synovitis that does not start with a primary epiphysitis brings up the question, Why should the hip joint be different from other joints in the body in being free from infective synovitis or arthritis? Or are all monarticular nontuberculous and nonsuppurative joints in children really epiphysitis? I do

not find it so easy to agree with this part of Dr. Miller's proposition, and eliminate from the classification infective arthritis in the hip. The anatomy of the hip joint does suggest that it may be less likely to contain an inflammatory process restricted to either the synovial membrane and cartilaginous surfaces on the one hand, or the epiphyseal cartilage on the other. I think it is one of the few joints in the body in which the epiphyseal cartilage is included entirely within the joint capsule and is in contact with the synovial fluid, so that in itself may support his proposition that the synovitis is secondary in all cases to epiphysitis.

DR HERMAN C. SCHUMM, Milwaukee. I made a survey of all the infectious hip conditions that have been seen at the Children's Hospital in the last five years. There were eighty-four cases of hip joint condition and seventeen of these could be classified under the title that Dr. Miller has expressed. I was able to get a few of these patients back for examination and to

make roentgenograms when they did come back. In going over the histories, there were a few things that stood out. First, that there was one group, a rather small one (in fact, six in number), in which the children were rather young, none being over 7, in which there was a definite history of trauma without any definite foci of infection. When children are admitted they are usually gone over by the various services, notes are made and I could not find on any of these notes that there were any foci of infection. The course of the disease in these cases was somewhat different from the others, that is it cleared up much quicker with treatment—rest and traction. All six cleared up with apparently perfect functional results in from one to two weeks. As to the other group of eleven patients, the condition in seven of the children cleared up without any demonstrable trouble in the joint, in four it progressed that is, the children had a destructive lesion in the head that slowly progressed and finally became a decided deforming factor. The children were about equally divided as to sex. Among seventeen children, eight were girls. The cases that cleared up without any deformity were cured within a period of five weeks. In one of these cases I was able to aspirate pus, in others no attempt at aspiration was made. In the one in which pus was aspirated there was no subsequent drainage. As far as the blood picture

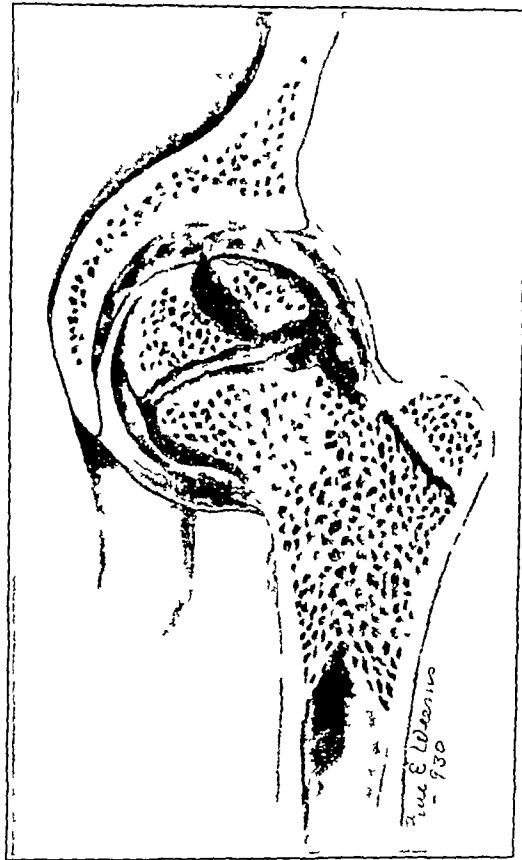


Fig. 5—Abscess on the epiphyseal side of the epiphyseal line burrowing through the head causing general reaction inside and outside the joint.

went, I could find nothing definite. Some of the more severely ill patients did not have a very high leukocytosis, although they appeared most sick. Some of the others had a leukocytosis varying from 10,000 to 25,000. In the first group of six children the temperature did not exceed 101 F in any case. In the group of eleven children the temperatures varied from 101 to 103.5 F. The thing that impressed me was that in going over the roentgenograms I found that all the cases were apparently negative with the exception of the four that showed this destructive lesion.

DR D. B. PHENISTER, Chicago. I should like to raise a point with reference to nomenclature. Lesions located on the shaft side of the epiphyseal line are usually spoken of as metaphyseal and those primarily on the epiphyseal side as epiphysitis. If most of these lesions begin on the shaft side, that term should not be included.

DR GUY A. CALDWELL, Shreveport, La. I should like to ask Dr. Miller two questions. The first is whether he made a

practice of aspirating these joints for diagnosis. I think that, when a child is admitted with a fever of 101 F or more, the white blood cells and the polymorphonuclear percentages increased and the joint distended with fluid, the condition warrants aspiration of the joint to determine whether or not pyogenic organisms are present and whether or not the character of the fluid is essentially purulent. I should like to know also at what stage and from what data he decided that conservative treatment should not be continued and that drainage was necessary. I have regarded cases with the clinical picture that he has described as being in reality osteomyelitis of the neck of the femur. The neck of the femur is in fact the upper extremity of the diaphysis. A suppurative focus developing in the neck of the femur adjacent to the epiphysis follows, therefore, the general rule that osteomyelitis originates in the diaphysis near the epiphysis and differs simply because the upper portion of the femoral diaphysis is included in the capsule of the hip joint. A suppurative process that extends to the bone surface in this region necessarily spreads by way of the epiphysis and gives rise secondarily to a suppurative arthritis of the hip joint. Since I have regarded such cases as osteomyelitis of the neck of the femur with secondary suppurative involvement of the hip joint I have made a practice of aspirating the joints, and when the aspirated fluid had the gross appearance of pus and showed pyogenic organisms in the smears when examined microscopically I have drained the hip joint by incision and have usually obtained a good result. I cannot say whether or not the same joints would have subsided without drainage because I have always accepted the presence of frank pus in a joint as an absolute indication for drainage and have not tried conservative measures.

DR CHARLES LEROY LOWMAN, Los Angeles. I should like to ask Dr Miller whether he has attempted to clear up the roentgenogram by photography in a variety of positions, in rotation and extreme flexion. In regard to interpretation of roentgenograms I have found that by using a pair of high powered field glasses and standing off 8 or 9 feet from the illuminating box I can get a definition that I cannot get in any other way.

DR J ALBERT KEY, St Louis. I have operated on two of these patients rather recently and found low grade minute streptococci in the culture. Another thing that was interesting was that the tissue which I removed and examined from these smaller foci in the epiphyseal line closely resembled a giant cell tumor.

DR HENRI W MEYFORD, Rochester, Minn. In examination of the x-ray plate these conditions have often been noted as described by Dr Miller. There has been difficulty, however, in recognizing and interpreting the roentgenogram. By cutting down the amount of light behind the plate, then holding the plate at an angle of from 40 to 60 degrees one can bring out these areas much more easily. A low grade osteomyelitis or possibly the beginning of an inflammatory lesion which might lead eventually to a giant cell tumor is being dealt with. It makes me think of the types of osteomyelitis sometimes seen a sclerosing type and a rarefying type, and again the types that go on to a solitary cyst.

DR OSCAR L MILLER, Charlotte, N C. Dr Lewin's question about the Wassermann test may be answered by saying that the Wassermann reactions were negative in this series of cases. The Pirquet tests were in the main negative, but I have not recorded the fact. That was an oversight. I don't know that I would have known how to interpret skin test observations. The false sign I don't know about at all. In regard to the question as to when they are well of course I am running traction when they are guarding the joint when I feel they are not guarding it. I remove the traction and allow freedom of the bed. If the child doesn't start protecting it again he goes on crutches and if that doesn't provoke disturbance I give him a little more freedom and let him go home. Dr Parody raised a question in regard to other joints. I think it is quite possible that the arthritis in some of the other joints might start within the epiphysis also. I think that is true of many other joints I have seen but I am sticking to the hip joint in this paper. The literature that helped me most in coming to my conclusion was the work of Karger on Bone Infections. He seems to lead all writers a little bit in his conception of how infections start and

travel along working under the periosteum and dropping into the joints. Dr Phemister's question about nomenclature is pertinent. I allowed myself to call this 'epiphysitis' because it seemed to be primarily, or very early secondarily, the epiphysis that became involved, so in lieu of a better name I have called it 'epiphysitis'. Dr Caldwell raised the question about when to operate and when not to operate. I never had a provocation to operate on any of these patients. In one of them, the sickest of the children I aspirated and it was a dry tap. I think that the septic joint tells its story pretty rapidly, so one does not have to worry about those one is going to drain and those one is not going to drain. It is a question of surgical judgment that evidences itself fairly quickly. These children come down a little slower than patients with a septic joint, the differential diagnosis from tuberculosis I won't go into. That is a study that is made in the ward. Everything at one's command is tried to arrive at an early and definite diagnosis of joint tuberculosis and then one fails on some of them. I have not tried the different positions of the hip that Dr Lowman suggested in getting roentgenograms. That should be interesting. I am interested in the question of organisms. I have no studies on that point as I felt the joint might be damaged in getting material.

THE TROPICAL RAT MITE, *LIPONYSSUS BACOTI* HIRST, 1914

THE CAUSE OF A SKIN ERUPTION OF MAN,
AND A POSSIBLE VECTOR OF ENDEMIC
TYPHUS FEVER*

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DALLAS, TEXAS

AND

WALTER E. DOVE, ScD

CHAPLSTON, S C

The present paper reports that in northern Texas an acarus of the human skin is caused by bites of a blood-sucking rat mite (*Leio gnathus*) *Liponyssus bacoti* Hirst. Attention is invited to the history of the parasite, to the types of lesions caused by bites of the mites, and to attempts to correlate the presence of these mites with the occurrence of endemic typhus fever.

HISTORICAL

The tropical rat mite was first recorded from rats in Egypt. In 1913 specimens of the mite collected at Assuit, Egypt were described by Hirst¹ as *Leio gnathus bacoti*. A few months later other specimens were obtained from Egypt, Abyssinia, Australia and Argentina. The latter specimens were recognized by Hirst as the same species. For them he considers the brown rat *Mus norvegicus*, as the principal host.

The tropical rat mite was first reported² as a blood sucker of man at Sydney, Australia. Specimens were obtained from man from the walls of a boot factory and from a bed made by rats. In that city the mites were also reported as attacking workers in a seed store and causing considerable irritation to the skin.³ In cities of western Australia specimens of the mites also were found on man.

In the United States this species made its appearance in 1921. Bishop³ reported that they were extremely

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* Contribution of the Department of Dermatology, Baylor University, College of Medicine, and of the Division of Insects Affecting Man and Animals, U. S. Bureau of Entomology.

¹ Hirst, S. *Leio gnathus Bacoti* Bull. Ent. Res. 1: 122, 1913.

² Hirst, S. On the Parasitic Acari Found on the Species of Rodents Frequenting Human Habitations in Egypt. Bull. Ent. Res. 2: 229, 1914.

³ Bishop, F. C. The Rat Mite Attacking Man. Circular 294, U. S. Dept. Agric. October 1923, pp. 1-4.

annoying to man in the vicinities of Dallas and Fort Worth, Texas. They were troublesome especially in business buildings. Persons in department stores, grocery stores, a railroad office, a motion picture theater, federal buildings, and houses adjoining restaurants were annoyed by bites. In one office building the parasites were present on the tenth floor. Bishopp attributes the advent of the mites to migrations of rats and to the tremendous increase in their number during 1920 and 1921.

INCIDENCE AND ORIGIN OF 'RAT MITE DERMATITIS'

Approximately three years ago, three members of a family consulted one of us (B. S.) for a skin eruption which had been diagnosed as scabies by a local physician. When these persons reported to us the eruption had not been influenced by various forms of sulphur medication. The dermatitis presented by the father and mother might easily have passed for a mild infection of *Sarcoptes scabiei*. The third member of this family, a girl, aged 18 months, presented a diffuse, extremely pruritic, papular eruption over the body with secondary excoriations and pustules. On the face, neck and scalp a few scattered papules were present. The

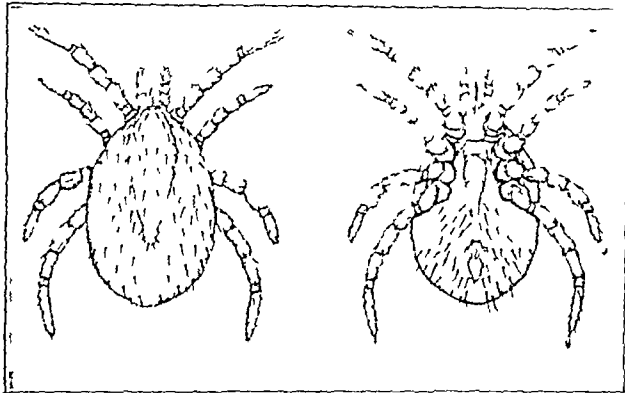


Fig. 1—Dorsal and ventral view of a female specimen of the tropical rat mite.

latter finding eliminated the possibility of scabies. A search of the patient's apartment revealed a heavy infestation of mites. Specimens were collected and identified by one of us (W. E. D.) as the tropical rat mite, *Liponyssus bacoti*. They were found on the walls of the room, on the bed of the child, and on the child's body. Many of them were engorged with blood. Inquiries revealed the fact that five additional families of the apartment house were affected with bites of these parasites. Since then, as many as 200 additional cases of this acarosis have been brought to our attention. Approximately 100 persons reported for treatment of the skin, and as many reported by telephone to the United States Bureau of Entomology. The frequent occurrence of cases of the condition caused us to adopt the popular name "rat mite dermatitis." According to the case histories there was a wide variation in the kinds of places where bites were received.

Theaters—In our private practice (J. B. Shelmire and Bedford Shelmire) women were seen who had visited a local motion picture theater. On them there were groups of papular and urticarial lesions, which were confined to the backs of their thighs and legs. An investigation of the theater revealed an infestation of tropical rat mites. The building was fumigated with hydrocyanic acid gas, with the result that cases ceased

to be seen at our office. Several months after the fumigation other persons having evidences of such bites were seen at our office. Some of them had visited the theater that had been fumigated, and others had visited another theater in the same neighborhood. We were impressed with the origin of the bites of these persons. It seemed that the semidarkness of the picture theater was favorable for the mites to bite. We made inquiry of Dr. J. C. Michael of Houston, Texas. He states that he has seen about a dozen cases of eruptions of this type in which there was a history of visits to motion picture theaters. Bedbugs were excluded in all instances.

Baylor Clinic—In the clinic building of Baylor Hospital a mild infestation of tropical rat mites caused five nurses and twelve patients to present evidences of bites from these parasites. The mites were found in the drawers of a desk and on the walls near hot water pipes. In the department of bacteriology, some distance from the clinic building, the mites were present during the spring months of the past two years. Three workers in this laboratory presented evidences of bites and called attention to the painful sensations that were produced by the feeding of the mites. When such sensations were felt, these men were able to find the mites and to remove them from their bodies.

Department Stores—In several instances, rat mites have bitten the employees of department stores. During a period of three months, nineteen girls working in one department store were seen with such skin eruptions. The bites were received shortly after a large number of rats were trapped or poisoned. When rats were destroyed the mites were forced to find other hosts for their meals of blood. The bites on persons often follow campaigns for destruction of rats. We have observed them on workers in seed stores, hardware stores, a shoe shop and a restaurant.

Private Dwellings—Our observations indicate that in Dallas the mite is well established in many residences and apartments. At some of the locations, persons have been annoyed during successive years. At other locations living quarters are vacated on account of the mites. In one instance the mites caused five families to move from an apartment hotel. These vacancies resulted in a loss of rent which amounted to \$1,000. The loss represented 20 per cent of the income of the hotel for a period of three months. It is seen that the rat mite problem is one of economic importance as well as one of interest to physicians and biologists.

During the past three years, approximately fifty persons affected with the bites of rat mites were seen in private homes. From telephone calls requesting information on these parasites we estimate that as many more persons did not report to physicians. In our opinion about one half of the number of persons received bites in the vicinity of their homes. Some of the patients found the mites when biting sensations were felt and were able to submit specimens for identification. Others did not suspect mites as the cause of the skin eruption and did not look for them. When mites were not found by the patients, we made visits to their residences. At such locations we were often able to find the mites on the walls of the rooms. They were found in the bath room or kitchen but were present in other places where heat was furnished. During low atmospheric temperatures they were found on the walls near lighted stoves.

When persons were suspected of having "rat mite dermatitis" and we were unable to find mites on the premises of the home or about the places of work,

inquiries were made regarding the presence of sparrows, chickens and other animals. There was seldom any indication that mites of such birds, fowls or animals were concerned in causing the skin eruption. The histories of these cases were correlated with the presence of rats. In some instances rats had been trapped or poisoned. In other instances the mites apparently came from beds abandoned by young rats. From these and other observations we consider rat mites as incidental parasites of man.

Out-of-Town Cases—A tentative diagnosis of "rat mite dermatitis" was made on eighteen persons residing outside the city of Dallas. In one of these cases the provisional diagnosis was confirmed by finding mites. One of us (W. E. D.) visited a patient from Sherman, Texas, and found mites on the walls and floor of the residence. The mites were identified as *Liponyssus bacoti* Hirst. Five of the other seventeen patients found mites on themselves or in the home but did not send in specimens for identification. The tropical rat mite has been obtained at Sherman, Longview, Henderson, Dallas, Plano and Fort Worth, Texas. From these collections and from the reports of bites it appears to be well established in northern and eastern Texas.

TYPES OF ERUPTIONS

On adults the primary lesions of rat mite bites are small urticarial wheals and papules varying in size from that of a pinhead to that of a split pea. The former lack the central hemorrhagic punctures that are considered characteristic of the bite of the bedbug, *Cimex lectularius*. On young children papules, urticarial welts and frank vesicles are often present. The vesicles are not confined to the hands and feet as in scabies but are diffusely distributed on the affected portions of the body. In the more diffuse eruptions the severe pruritus causes the patient to scratch and this results in secondary excoriations.

On adults the lesions are usually few in number. Often there are no more than six to twelve lesions grouped about the ankles or on the trunk. Rarely, an adult presents generalized evidence of mite bites. In some of the homes where infants were bitten by mites the adults showed less evidence of the bites. They were annoyed so little that they did not volunteer the information until they were examined. In both adults and infants there is a definite tendency toward grouping of the bites. This is attributed to the piecemeal feeding of the mites.

The sites of predilection are not only those portions of the body which come into contact with the mites but also the areas having clothing to press on the mites. In addition to the face and hands of children lesions are found about the ankles, belt line, upper shoulders and neck. On women visiting motion picture theaters lesions occur on the flexor surface of the lower part of the thighs and the upper part of the legs.

In diagnosis, rat mite dermatitis must be differentiated from scabies, pediculosis corporis, and bites from chiggers, bedbugs, fleas, grain mites and other blood-sucking insects. In children having vesicular lesions the eruption must be differentiated from chickenpox. In one of our patients a little girl of 18 months the lesions resulted in a quarantine for chickenpox until it was proved that the intensely pruritic eruption was due to the bites of the tropical rat mite. Scabies and pediculosis can usually be excluded on clinical grounds, but in other cases a differential diagnosis depends on the recovery and identification of the mite.

IDENTIFICATION OF MITES

The adult female is illustrated in figure 1. It has definite characters which enable one to identify it. It is more easily identified when the specimen is cleared. In order to avoid the possibility of confusing this species with mites which breed in decaying wood or vegetable matter, or with at least two species of fowl mites, *Liponyssus sylvaticum* and *L. bursa*, it is suggested that specimens be sent in for identification. Living mites may be placed in dry vials with small bits of paper. The vials should be well corked to prevent the escape of any of the mites. In selecting specimens for identification, it is desirable to obtain the adult females. They are much larger than other stages of this species. When engorged with blood they are rather clumsy in crawling and are easily transferred to vials with a camel's-hair brush.



Fig. 2.—Papular lesions from mite bites limited to the back and neck.

HABITS AND LIFE CYCLES OF MITES

When the female mites engorge with blood, they do not remain attached to the skin. They may remain in the hair of rats for several hours, but usually they leave the host and seek cracks, crevices or other protected places. They prefer dark locations where there is no moisture. In such locations a female having a single meal of blood may deposit from three to eight eggs. The eggs hatch in about four to six days. If within twelve days the young mites are unable to find a suitable host, they die of starvation. If the period of incubation is added to the period of longevity of newly hatched mites, it is seen that a period of about eighteen days is necessary for incubation of the eggs and starvation of the young mites emerging therefrom. This means that, following the destruction of all rats, a period of about eighteen days must elapse before the

mites will all have perished of starvation. It is possible that starvation of the nymphal stages of the mites may require slightly longer periods. The female mite is capable of living approximately ten days without feeding.

The newly hatched mites attach to the skin of the rats or mice for approximately two days. Some of them may be observed on the eyelids, feet and thighs of the animals. From many locations on the body, the rat is able to remove the mites by scratching and to devour them. When newly hatched mites become engorged with blood they drop from the animal. At a later time they molt their skins. Following molting they reattach themselves to an animal for another meal of blood. There are apparently four or five feedings and three or four moltings before the larvae attain

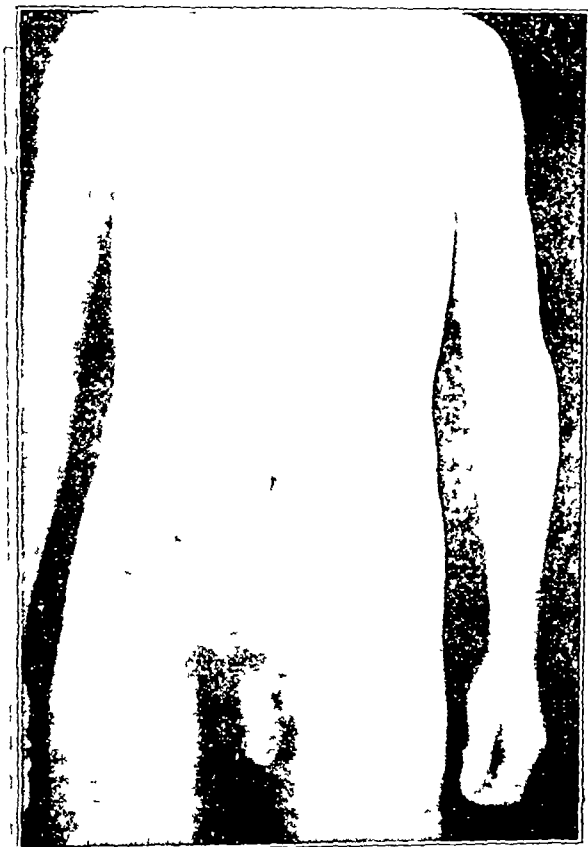


Fig. 3—Papular lesions from mite bites grouped at the belt line

maturity. Such engorgements may take place on one animal or on different ones.

On man a mite may obtain a meal of blood from several places. The piecemeal feeding may be attributed to the disturbance of the mites, or to the fact that man is an abnormal host.

ENDEMIC TYPHUS, OR BRILL'S DISEASE

There is endemic in certain sections of the United States a disease which resembles typhus fever and gives positive Weil-Felix reaction in high dilutions. Most of the records of cases are from the Atlantic seaboard and Gulf ports. The cases occur in mild epidemic or sporadic form, run a definite febrile course of approximately two weeks and are accompanied by a characteristic erythematous macular and petechial cutaneous eruption. The American form of the disease differs from Old World typhus in its relative mildness and

in certain well marked epidemiologic characteristics. The former is clinically indistinguishable from the mild typhus occurring during interepidemic periods in the Old World and Mexico. According to Mavey,⁴ the North American strain seems to be derived from the Old World source. In contrast to Old World typhus, there is evidence that the disease is not transmitted from one person to another by the body louse. In the United States there is a summer and fall incidence, and the disease does not seem to be communicated directly from one person to another.

Mavey, an outstanding authority on endemic typhus, or Brill's disease, believes that "a reservoir for the disease may exist other than in man, a rodent reservoir with accidental transmission to man through the bite of some parasitic blood-sucking insect or arachnid. The rodents upon which suspicion immediately falls are rats and mice, and the parasitic intermediaries which are first suspected are fleas, mites, and possibly ticks." He bases this hypothesis on "(1) the uneven focal distribution of the disease, (2) its sporadic occurrence, (3) its apparent lack of direct communicability from an infected person, (4) its association with the place of business rather than with the home particularly with those premises upon which foodstuffs are handled or stored, (5) the reoccurrence of cases on the same premises after considerable intervals of time, and (6) its seasonal incidence."

POSSIBLE RELATIONSHIP OF THE TROPICAL RAT MITE TO ENDEMIC TYPHUS

With the occurrence of "rat mite dermatitis" in northern and eastern Texas, endemic typhus fever, or Brill's disease, made its appearance. The coincidental advent of the disease and of the parasite causes us to question whether or not there is a possible relationship between them. Reports have been received of the occurrence of 11 proved and 125 probable cases of the disease. This section of the present paper reports the occurrence of *Liponyssus bacoti* in four localities furnishing proved cases of endemic typhus. It reports some evidence of "insect" bites previous to the onset of endemic typhus.

Cases at Dallas and Fort Worth—During the past year six cases of endemic typhus were reported at Dallas. They were clinically typical of the disease and the blood samples gave a positive Weil-Felix reaction in high dilutions. Three additional cases originating in the vicinity of Fort Worth proved to be typhus. At both Dallas and Fort Worth the tropical rat mites have been of economic importance and of medical interest. Of a large number of persons receiving bites of the mites who reported for treatment of the skin eruption we do not know of any who developed symptoms of endemic typhus. However we were able to question only a small number of our patients regarding illness subsequent to their cutaneous eruptions. We would expect only a small percentage of the mites to harbor the organisms of endemic typhus. In Old World typhus only the infected lice are capable of transmitting the disease.

The persons affected with endemic typhus at Dallas and Fort Worth did not recall having been bitten by insects. Two of these persons assisted us in examinations of their places of business. In these locations we were able to find rats infested with *L. bacoti* and rat fleas.

⁴ Mavey, K. F. Typhus Fever in the United States. Pub. Health Rep. 44: 1735-1742 (July 19) 1929.

Cases at Gilmer—During the past year clinical symptoms indicated that five cases of endemic typhus occurred in the vicinity of Gilmer, Texas. Also, blood samples drawn from two of these persons during their illness gave a positive Weil-Felix reaction in high dilutions. In the proved cases the patients did not recall whether or not they were affected by "insect bites." A visit was made to the bakery that was operated by these persons. Beneath the floor of the bakery a large number of rats were present in the ground. As yet we have been unable to trap these rats or to obtain parasites from them.

Cases at Longview—From talks with physicians in the vicinity of Longview, Texas, it appears that many cases of endemic typhus were diagnosed as "short typhoid" or "unknown fever."

Since one of the proved cases of endemic typhus reported at Dallas from Longview, a questionnaire regarding this disease was sent to Dr. C. C. Adams of that city. He reported that during the past three years he has seen approximately fifty cases of what he now believes to be Brill's disease. His last case was the only one tested for the Weil-Felix reaction. According to the report, all the cases had negative tests for typhoid and paratyphoid fever. The blood counts were somewhat higher than in typhoid, but sometimes as low as would be expected in typhoid. About the fifth day a rash came on the skin of some of the patients. The lesions were more marked and considerably more numerous than the

rose spots of typhoid. Rigors were nearly always present early in the disease. As compared with typhoid, the bronchial symptoms were more common, pain was more severe, and nervous symptoms were more marked. Occasionally there was considerable embarrassment of the heart and a faster pulse. Until recently Dr. Adams believed that these were cases of paratyphoid of a strain that was not represented in the triple vaccine. With such a vaccine he was unable to get immunity for this disease. About ten of his patients were administered the triple vaccine within from six weeks

were received in the room of a hotel. When the bites were felt he made a search for bedbugs but was unable to find them.

Inquiries were made of the city manager of Longview. According to him, approximately 100 cases occurred there during the past three years. He says that the cases had a course of fourteen days almost to the day. His records show that the greater number of cases occurred during August, October and November. During the early half of last November the cases were as numerous as those of any preceding month. His records indicate also that cases occurred among the workers of at least two stores. Five persons working in a grocery store from March 23 to Aug. 31, 1929, were affected with the so-called unknown fever.

Rats were trapped in stores at Longview and from them we were able to recover specimens of the tropical rat mite. The rats examined were infested also with fleas.

Cases in Other Towns—In other towns within a radius of 25 miles of Longview, cases of "short typhoid," or "unknown fever," were reported. At Henderson, Texas, at least seventeen patients reported for treatment during the last calendar year. Rats obtained in this locality were found to be infested with tropical rat mites and rat fleas. Some of the towns reporting cases of the fever were not visited by us.

WEIL-FELIX TESTS ON PERSONS RECOVERING FROM ENDEMIC TYPHUS

Following the recovery of five persons with proved infections of endemic typhus, samples of blood were drawn and the Weil-Felix tests were repeated. The latter specimens were sent to Dr. R. E. Dyer, Hygienic Laboratory, Washington, D. C. Two of the samples represented patients who gave positive reactions in dilutions of 1:160 during their illness. Approximately six and eight months after illness the blood samples gave positive reactions in dilutions of 1:40. Samples of blood obtained from two other patients during illness gave positive reactions in dilutions of 1:640. Four and eight months after illness the latter cases were negative for similar tests. A fifth patient, whose blood gave a positive reaction of 1:320 during illness, furnished a sample of blood two months later which gave a negative reaction. From the tests on persons recovering from endemic typhus it appears that the agglutinins are present in the blood stream only for short periods.

The results of the tests on proved cases of endemic typhus were similar to tests made with blood of persons suspected of having endemic typhus at Gilmer and Longview. From these localities nine samples of blood



Fig. 4.—Typical grouping of bites on the lower part of the leg. The patient also had a few isolated lesions over the body.



Fig. 5.—Mite bites scattered diffusely over the body, face and scalp. As many lesions were vesicular the eruption closely resembled chickenpox.

to six months before they became sick. The duration of his cases was from ten to fifteen days. From these patients no specific inquiry was made regarding insect bites prior to the onset of the illness. In the proved case from Longview there was a definite history of insect bites seven days before onset of the illness. Serum of his blood was positive for the Weil-Felix test up to 1:640. According to him, the bites

were obtained from persons several months after their illness. Five of these were negative for the Weil-Felix tests and four of them were positive in dilutions of 1:20 and 1:40. (The positive reactions in dilutions of less than 1:80 are not considered diagnostic of this disease.)

COMMENT

The occurrence of tropical rat mites at Dallas, Fort Worth, Henderson and Longview, Texas, show a coincidental occurrence of these parasites with proved cases of endemic typhus. The history of "insect bites" of one of the patients would seem to strengthen the hypothesis of insect or arachnid transmission of the disease.

According to Bishopp,³ the tropical rat mites occurred at Dallas just after there were migrations of large numbers of rats from the South. Since the rat mites and endemic typhus were found in this section after the migrations of large numbers of rats, one is inclined to attribute the advent of the new parasite and of endemic typhus to these migrations.

Since the report of the occurrence of tropical rat mites in Australia, it is interesting to note that small numbers of mild sporadic cases of endemic typhus have been reported by Howe⁴ of Adelaide, Australia.

SUMMARY

1 Approximately 200 cases of "rat mite dermatitis" are reported from Dallas, Texas, and neighboring towns.

2 From persons having evidence of mite bites and from their residences or places of work, mites were collected and identified as *Liponyssus bacoti* Hirst.

3 At Dallas, Fort Worth, Henderson and Longview, Texas, mites were collected from rats and were identified as *Liponyssus bacoti*.

4 At Dallas, Fort Worth, Henderson and Longview, 11 proved cases and approximately 125 cases of suspected endemic typhus are reported.

5 From tests on persons recovering from endemic typhus it appears that agglutinins are present in the blood stream only for short periods of time.

6 The advent and coincidental occurrence of endemic typhus and the tropical rat mite in northern and eastern Texas suggest that these parasites may be vectors of the disease.

ADDENDUM—Since July, 1930, nine proved cases of endemic typhus have been seen at Henderson and Longview, Texas. From locations suspected of being the origin of these cases, we obtained tropical rat mites and rat fleas. An account of the studies with these parasites will be published in a later paper.

ABSTRACT OF DISCUSSION

DR. CLARK W. FINNROD, Chicago: I am sure we all feel confident that we should recognize this dermatosis should these rats and their parasites migrate to our respective communities. When confronted with a clinical picture simulating scabies, pediculosis or the bites of other parasites, not being able to demonstrate their causative organism, we shall now be on our guard for a traumatic and urticarial dermatitis, the result of bites of the tropical rat mite. The most important aspect of this communication and study is of course that portion which does not concern the dermatologist alone and which as yet is a speculation. I refer to the etiologic relationship of this parasite to endemic typhus.

DR. JOHN E. LAKE, New Haven, Conn.: I should like to know how often, if ever, the itch mite has been recovered in these cases.

³ Howe quoted from Stitt, F. R. *Diagnosis and Treatment of Tropical Diseases*. Philadelphia: P. Blakiston's Sons & Co., 1929.

DR. R. R. SPENCER, Washington, D. C.: I should like to know whether there was fever with the dermatitis, and whether the authors think this has any relationship to typhus fever, and if in the typhus fever patients there is a definite history of bites before the onset of the fever. We in Washington are greatly interested, for we suspect that the tick has something to do with typhus fever. All through the South and particularly in Washington, we get definite histories of typhus fever following tick bites.

DR. BRADFORD SHELMIF, Dallas, Texas: Regarding the question of Dr. Lake, the skin irritation is caused by the bites of the blood sucking mites and is analogous to the bites of the mosquito or other blood sucking insects. After the mite becomes engorged with blood it drops from the human body to hunt some crack or crevice. The skin symptoms of the individual infested with these mites are not caused from the migrations of these mites within the skin as in an acarous scabies infection. Dr. Spencer asked about fever in connection with the bites of these insects. When bites are very numerous the patient may show a transient fever for a day or two. This was noticed in the case of a little girl quarantined for chickenpox and in two girls working in the Dallas branch office of one of the large mail order houses. In the latter instance the two victims showed large numbers of bites and the accompanying fever caused the nurse in charge to send the girls home from work. This mild fever is analogous to that often displayed by a patient with a large number of chigger bites and is not a manifestation of typhus. It is of toxic and not infectious origin.

OSTEOMYELITIS VARIOLOSA

REPORT OF THREE CASES*

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AND

JOHN F. LeCOCQ, M.D.

SEATTLE

The ordinary acute osteomyelitis is sometimes one of the complications attending cases of variola. That it does not occur more frequently than it does is rather surprising, in view of the fact that smallpox is usually accompanied by more or less suppuration. This ordinary acute osteomyelitis complicating variola will not be discussed in this paper.

However, that smallpox can produce another type of osteomyelitis, nonsuppurative in nature, now seems to be a well established fact. In the obscure deformities, inequality in the length of the upper or lower extremities, it is well to inquire carefully whether variola has preceded the onset of the clinical manifestations of the deformities.

PATHOLOGY

Since the descriptions of Chiari and Mallory, little has been added to the literature dealing with the pathology of this condition.

Chiari¹ in 1893, made a report of the observations in twenty-two cases of smallpox that had come to necropsy. These patients had died during the three different stages of variola. In 86 per cent of the cases disseminated foci were found in the bone marrow, and these foci had definite variolar characteristics. But these foci did not show any evidence of suppuration. In one case which came to necropsy two months after smallpox, he found that there were still evidences of isolated, nodular, pale foci in the bone marrow. The obliterated structure of the bone marrow was being replaced by granular

* Read before the Seattle Surgical Society, Seattle, May 23, 1930.

¹ From the orthopedic clinic of the Children's Orthopedic Hospital.
¹ Chiari, H. *Über Osteomyelitis variolosa*. Beitr. z. path. Anat. u. z. allg. Path. 13: 1893.

detritus, suggesting that resorption was in progress. In this case there were no evidences of suppuration. It was his belief that these foci in the bone marrow caused the bone pains which often accompany cases of smallpox.

Mallory,² in 1894, reported the autopsy observations in three cases of smallpox in which the patients died during the stage of suppuration. His descriptions of the foci found in the bone marrow are quite similar to those given by Chiari.

LITERATURE ON REPORTS OF CLINICAL MANIFESTATIONS

In 1903, Debeyre³ observed that cases of osteomyelitis complicating smallpox rarely ended in suppuration.

In 1910 and 1913, Musgrave and Sison⁴ reported a series of eighteen cases of deformities in adults from

another case which showed involvement of the tibia, fibula and ankle joint.

In 1923, W. L. and C. P. Brown⁷ reported two cases, one showing deformities of the forearms and wrists, these having developed following an attack of smallpox three years previously. The roentgenograms indicated destruction of the lower epiphyseal lines of the radius and ulna, and the upper epiphyseal lines in the radius on the right side. The left tibia and fibula also showed evidences of necrotic areas in their distal portions. The right clavicle was shorter than the left. There were no evidences nor history that suppuration or draining sinuses had been present excepting the necrotic area in the tibia. The second case presented a shortening of the right forearm and an overgrowth of the ulna as compared to the radius, causing a radial club hand. There were no evidences of scars, showing that there might have been suppuration. Their report gives an excellent summary of all the literature up to that date.



Fig 1 (case 1)—Elongation of the ulna on the right side



Fig 2 (case 1)—Front view, showing in crease of carrying angle

whom histories were obtained of having had smallpox in childhood and in whom the deformities developed after the attack of variola. The roentgenograms showed extensive destruction in the epiphyseal ends of the long bones. None of these cases showed evidences of former suppurative processes having been present. These cases were all in Filipinos.

In 1912 Cange⁵ reported three cases of deformities of the forearms and hands following smallpox.

In 1922 Sheldon⁶ reported one case showing marked deformities of the elbow and forearm, and

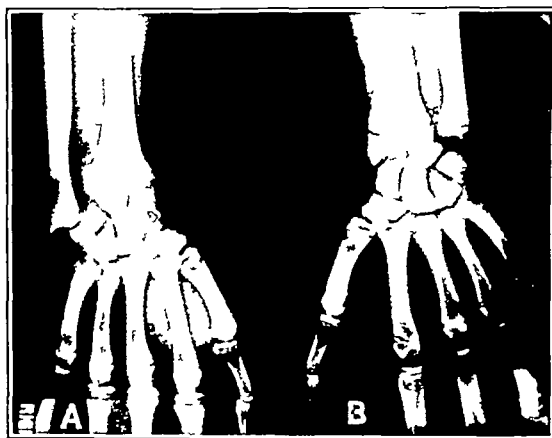


Fig 3 (case 1)—A right wrist closure of the epiphyseal line of the radius elongation of the ulna B left wrist normal

In 1926 Huenekens and Rigler⁸ gave a description of the clinical manifestations of osteomyelitis variolosa.

² Mallory, F. B. Ueber die Verbreitung der Osteomyelitis variolosa in Knochensysteme. Ztschr. f. Heilk. 15: 253-254, 1894.

³ Debeyre, A. Osteomyelitis post variolique. Echo med. du nord 7: 182, 1903.

⁴ Musgrave and Sison. The Bone Lesions of Smallpox. Philippine I. Sc. December 1910, April 1913.

⁵ Cange, A. Un syndrome osteomyelitique post variolique. Province med. 27: 535, 1912.

⁶ Sheldon, F. B. The Bone Lesions of Smallpox. Tr. Am. Roentgen Ray Soc. 1922.

⁷ Brown, W. L. and Brown, C. P. Osteomyelitis variolosa. J. A. M. A. 81: 1414 (Oct. 27) 1923.

⁸ Huenekens, E. J. and Rigler, L. G. Osteomyelitis variolosa. J. A. M. A. 87: 295 (July 31) 1926.

in its acute stages. They report a case in a boy, aged 6 years, who, some days after the diagnosis of smallpox had been made, developed tender and fusiform swellings of many of the joints in the body, especially those of the extremities. The roentgenograms showed a roughening of the diaphyseal side of the epiphyses as

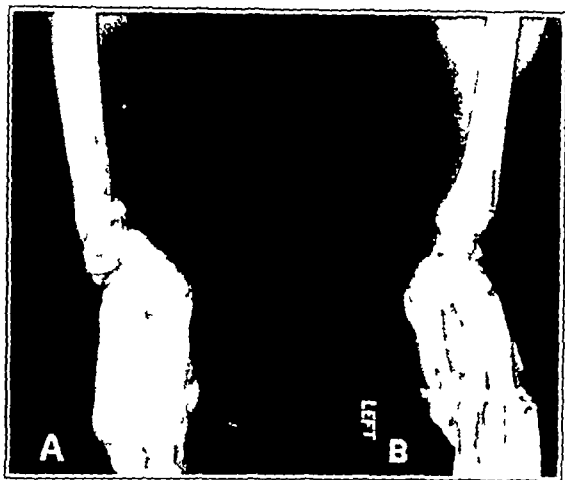


Fig 4 (case 1)—A right wrist deformity of the distal portion of the radius, B left wrist normal

well as roughening of the epiphyseal side of the diaphyses. There never developed evidences of suppuration, and in due course of time the swelling and tenderness subsided. It would be of interest to have a



Fig 5 (case 2)—A right femur tibia normal B left femur tibia partial closure of the distal epiphyseal line of the femur deformity of the diaphyseal portion of the femur adjacent to the epiphysis

further report from these authors as to the further progress of the case.

In 1929, Lombard⁹ reported two cases of deformities following smallpox, one case showing deformities

of the elbows and numerous scars showing that suppuration had been present. Therefore, this case should be regarded as an ordinary type of acute osteomyelitis. The second case was in a boy, aged 13 years, who had had smallpox at the age of 2 years. There was deformity of the left forearm due to destruction of the lower and upper ends of the radius. There were also destructive bone lesions of the left knee and ankle. From his description there were evidently no evidences of suppuration having been present. He regarded these as being attenuated forms of osteomyelitis which localized themselves in the junta-epiphyseal regions, and that the radius is the bone of preference.

CLINICAL MANIFESTATIONS

From the literature cited it is evident that often the diagnosis of osteomyelitis variolosa is not made during the acute stages of the disease. The patients with smallpox who develop the bone complications do not show deformities until after the attack of smallpox. It is obvious that these deformities would not occur in adults who have had smallpox during adult life, because

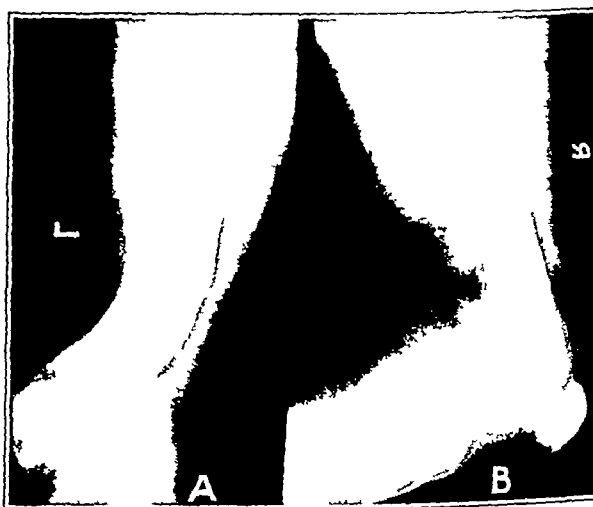


Fig 6 (case 3)—A left femur deformity thickening of the distal portion closure of the epiphyseal line B right femur, normal

bone growth has occurred and the virus of the smallpox apparently affects only the epiphyseal lines of the bone. Adults would for that reason not develop these deformities. Therefore, the deformities will occur if variola has been present during childhood or before the closure of the epiphyseal lines has occurred.

The individual consulting the physician does so because of deformity which is present or which may be becoming progressively more marked. In none of the cases that we have seen were there complaints of pain, except because of static disturbances.

REPORT OF CASES

CASE 1—G. B. a girl aged 11 years was brought in because of deformity of the right wrist. There was no history of any previous injury. There was a definite history that she had had an attack of smallpox three years previous to the time of examination. The deformity of the right hand and elbow began to develop shortly after the attack of smallpox. Examination showed the ulna to be markedly elongated as regards the radius and produced a typical radial club hand. The right elbow also showed a markedly increased carrying angle due to the elongation of the ulna (figs 1 and 2). The roentgenograms showed an old destructive process in the

⁹ Lombard, P. Osteomyelitis After Smallpox. *Revue d'orthop.* 16: 490 (Nov.) 1929.

distal end of the right radius with considerable deformity in the region of the epiphyseal line, and apparently almost a complete closure of the epiphyseal line. Other long bones in the body were not affected (figs 3 and 4).

CASE 2—E L, a boy, aged 7 years, was brought in by his mother because she had noticed that the boy had been developing a lump about two years previously which was progressively becoming worse. There was no history of injury or anterior poliomyelitis. There was a definite history of a mild attack of smallpox at the age of 2 years. Examination

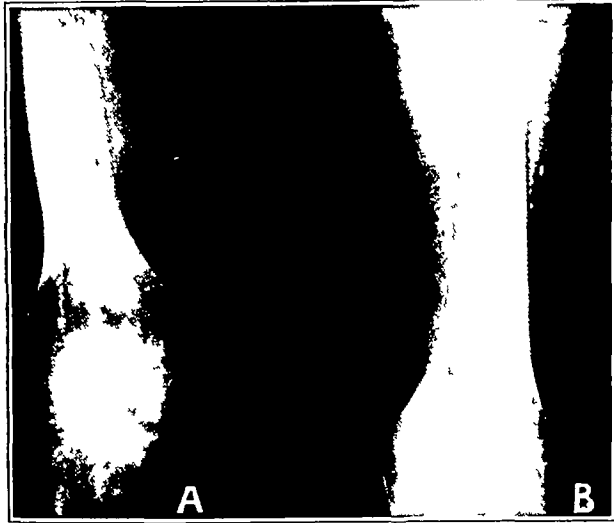


Fig 7 (case 3)—A left femur closure of the epiphyseal line and area of decreased density in the distal portion B right femur normal

was entirely negative excepting that there was $1\frac{1}{2}$ inches of shortening of the left lower extremity, this shortening being entirely confined to the femur. Roentgenograms of the left femur showed a partial closure of the distal epiphyseal line and a flaring out of the epiphyseal part of the diaphysis (fig 5).

CASE 3—G S, a boy, aged 14 was admitted to the hospital for treatment of flexion contractures of both hips following a severe tuberculosis of the spine. After his discharge from the hospital he was seen at frequent intervals in the outpatient department. It was noted that he was developing a progressive shortening of the left lower extremity. At 17, this shortening amounted to $2\frac{3}{4}$ inches and was entirely confined to the femur. Roentgenograms showed a complete closure of the distal epiphyseal line of the left femur and a considerable deformity of the epiphysis. There was also a light area a few centimeters above the epiphyseal line indicative that undoubtedly there had been a focus in that location (figs 6 and 7).

A definite history of smallpox in childhood was obtained, and the boy also showed the scars of smallpox on his face.

The fact that this patient had a tuberculosis of the spine might throw some doubt on the correctness of the diagnosis. However it would be extremely rare for a tuberculous process to show the radiologic signs present in this case. Furthermore the definite history of smallpox and the characteristic manifestations would make us believe that we are justified in classifying this as a case of osteomyelitis variolosa.

CONCLUSIONS

1 The virus of smallpox undoubtedly causes a non-suppurative osteomyelitis.

2 The site of election of the virus apparently is in the epiphyseal lines of the long bones.

3 The effect of the virus is to produce an aseptic necrosis which apparently chiefly affects the growing cartilage cells of the epiphyseal lines and causes premature closures.

4 Deformities are caused by the inequality of growth of the long bones.

5 In obscure deformities a careful history of variola in childhood should be obtained.

1011 Summit Avenue

URETERAL ANOMALIES

REPORT OF A CASE MANIFESTING THREE URETERS ON ONE SIDE WITH ONE ENDING BLINDLY IN AN APLASTIC KIDNEY AND A BIFID PELVIS WITH A SINGLE URETER ON THE OTHER SIDE*

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AND

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Recognition of anomalies of the ureter has become common with increase in frequency of the cystoscopic and roentgenographic study of patients. The precision with which the entire urogenital system may be brought before one's eyes has clarified many otherwise obscure pathologic conditions. The advent of iopax (sodium 2-oxo-5-iodo-pyridine-N-acetate, introduced as 'Uroselectan') as an additional means of studying the func-

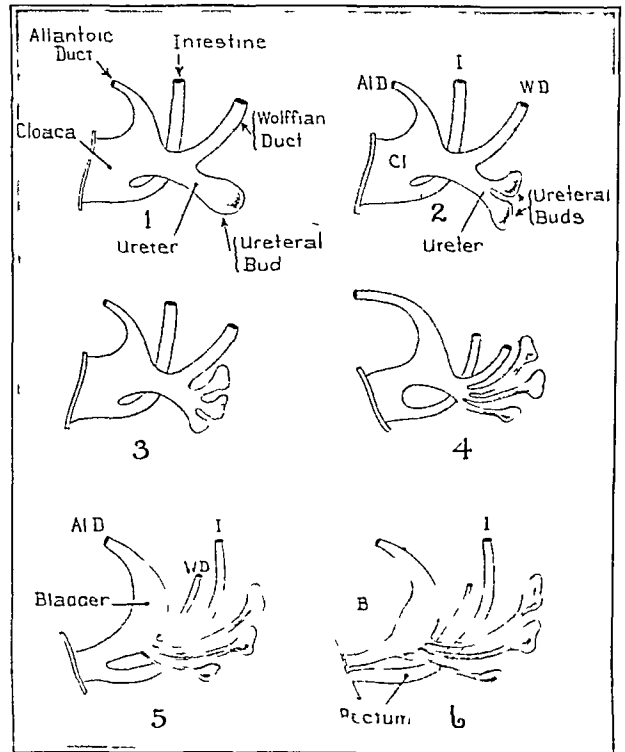


Fig 1—Diagram based on the models of Keibel and Felix attempting to show the probable development of three ureters on one side with separate renal pelvis. 1 normal ureteral bud branching from the Wolffian duct. 2 hypothetical development of a bifid pelvis or a bifid ureter. 3 hypothetical development of three ureters on one side. 4 a later stage with the three ureters traveling toward the bladder. 5 ureters in the bladder wall, the ureters have separate orifices in the bladder and the Wolffian duct (vas deferens) has completely separated from them.

tion as well as the contour of the urinary tract is another distinct step forward.

* From the James Buchanan Brady Foundation for Urology of the New York Hospital.

Read before the Section on Urology at the Eighty First Annual Session of the American Medical Association, Detroit, June 27, 1930.

LITERATURE

Before it was possible to study the urinary tract completely, the only reference to ureteral anomalies was made from postmortem examinations. In searching the literature carefully we have been able to find reference to only seven cases that were supposed to present three or more ureters on one side, and in each of these there

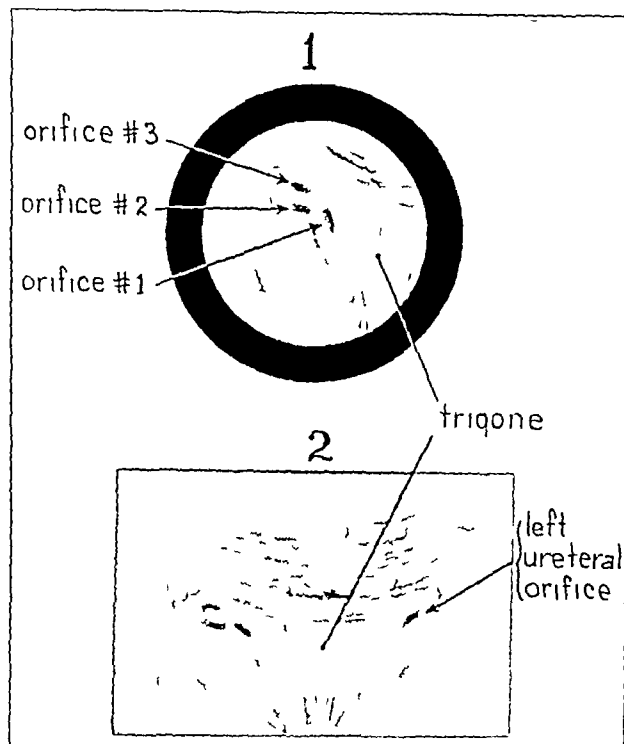


Fig. 2—Cystoscopic appearance of the ureteral orifices on the right side and the single ureteral orifice on the left side

seems to be insufficient data to give complete proof of their existence.

In 1675, Molinetti¹ mentioned a case of multiple ureters. Copies of his book are so rare that it was necessary to obtain the information from the Medical Library of the Surgeon General's Office in Washington, D. C. Because of this difficulty, we believe it worth while to publish the original reference.

Quinque ego in muliebri cadavere vesicas olim reperi, ac publice ostendi, quibus par renum numerus respondit, sex autem prostabant ureteres, quorum unum minor quolibet vesica excipiebat, duo vero, ut adsolet in maiorem demergebantur in quam per singulares tubulos urina a minoribus destillabat, & consueta via exercebatur.

Translated it would read

I once found five bladders in the cadaver of a woman, the number of kidneys was the same, but six ureters projected, a small one was joined with the bladder, two indeed as is customary, were submerged in a larger one [emptied into a larger one] in which by means of separate tubes, urine trickled down from the smaller ones and was discharged in the usual way.

There were no drawings or further comments concerning this case. Apparently this specimen was one of multiple diverticula of the bladder and an incomplete triplication of the ureters of each side, probably with four ureteral openings in the bladder.

Chopart² in 1830 cited a case of Saloman Albert in which he states that he found three ureters from the right kidney and one from the left "Saloman Albert a trois ureters au rein droit d'un homme et un seul a celui du cote gauche." This amount of data is rather inconclusive.

Gould reported two cases of complete bilateral duplication of the ureters in 1903. The second case showed an ovarian vein which emptied abnormally into the right renal vein instead of into the vena cava. The drawings of this case made this ovarian vein appear to be a third ureter, although Gould did not describe a third ureter on either side. This drawing was reproduced in Watson and Cunningham's⁴ textbook and referred to as showing three ureters on the right and two on the left side. Personal communications⁵ have failed to explain this discrepancy. Papin⁶ doubts whether a case has ever been presented which actually manifests three ureters on one side extending into the bladder with distinct ureteral orifices.

Cunningham states that he distinctly remembers an autopsy on a woman in whom there were three ureters and three kidneys on each side. Further information concerning this case could not be obtained.

Furstner⁷ presents a sketch of a kidney from an autopsy specimen which shows five ureters leading from



Fig. 3—Flat roentgenogram with lead catheters extending to upper and lower halves of double right kidney and third catheter passing to body of sacrum.

the right kidney. These ureters soon fuse in their descent toward the bladder, then divide into two ureters,

² Chopart François. *Traite des maladies des voies urinaires* 1 292 1830.

³ Gould A. H. *Am. J. M. Sc.* March 1903.

⁴ Watson and Cunningham. *Diseases and Surgery of the Genito-Urinary System*. Philadelphia: Lea & Febiger 2 70 1908.

⁵ Cunningham. Personal communications to the authors.

⁶ Papin E. *Anomalies de l'uretère* in *Encyclopedie française de urologie* 3 948 1914.

⁷ Furstner C. *Virchows Arch. f. path. Anat.* 59 403.

¹ Molinetti Antonius. *Dissertationes anatomicae et pathologicae de sensibus et eorum organis*. Padua 1669 p. 303.

and finally fuse again before they enter the bladder in a single ureteral orifice.

Pavaloff⁸ states that Wrangy⁹ described a case presenting three ureters from one kidney, but the triplication was incomplete. He also refers to a case of Forster in which there were supposed to be four ureters present on the right side. Niemeyer¹⁰ presented a case show-



Fig 4—Pyelogram and ureterogram of double right kidney, larger and slightly lower in position than normal.

ing four branches of the left ureter in a child in which many other malformations were present.

One can readily see how uncommon a report of three ureters is in the literature. There is room for doubt whether any of these cases actually manifested three ureters and three ureteral orifices in the bladder on one side.

It is not difficult to understand why anomalies in the urogenital system are so uncommon if one considers its complicated development. The derivation from both mesoderm and entoderm, passing through the stages of pronephros, mesonephros and metanephros, the migration of the kidney from the pelvis to the lumbar region with its rotation around its longitudinal axis, and the complexity of the development of the renal vascular system with its various transformations, permits one to conceive of the possibilities of abnormal development. Patients may go through life without the knowledge that a ureteral anomaly is present unless some pathologic process intervenes. However, pathologic conditions are more prone to develop when an anomaly already exists.

8 Pavaloff, A. Ueber zwei seltene Harnleiter. Deutsche Zeitschrift für Chirurgie 1915, p. 121.

9 Wrangy, A. Österreichisches Jahrbuch für Pädiatrie 1, 108, 1870.

10 Niemeyer, C. E. Singularis in foetu prellari recens edito abnormis exemplum. Inaug. Diss. Halle 1814, cited by Schwarz, C. Ueber abnorme Ausmündungen der Ureteren u. deren chirurg. Behandlung. Beitr. z. klin. Chir. 15, 159-244, 1896.

EMBRYOLOGY

To understand thoroughly how double or triple ureters may be formed, one must begin with the earliest development of the ureter. The metanephros, or permanent kidney, first makes its appearance about the fourth week of embryonic life, as a mass of mesodermal cells arising from the caudal portion of the nephrogenic cord. At this time the ureter and entire efferent apparatus makes its appearance as a budding or evagination from the ampullary end of the Wolffian duct close to its point of opening into the cloaca. This ureteral bud grows first dorsally and then turns upward or cranially toward the nephrogenic cells. The end of this bud becomes dilated, forming a cap, which is the beginning of the renal pelvis.¹¹

By a process of dilatation, the lower portion of the Wolffian duct enlarges and becomes continuous with the adjoining portion of the cloaca. The ureteral bud is thus pulled down and incorporated into the dilated portion of the cloaca, which later becomes the bladder. Thus the two ducts acquire separate openings, the ureteral bud emptying into the cloaca (future trigonum vesicae), while the Wolffian duct, destined to become the vas deferens, finds its termination farther down into the prostatic urethra.

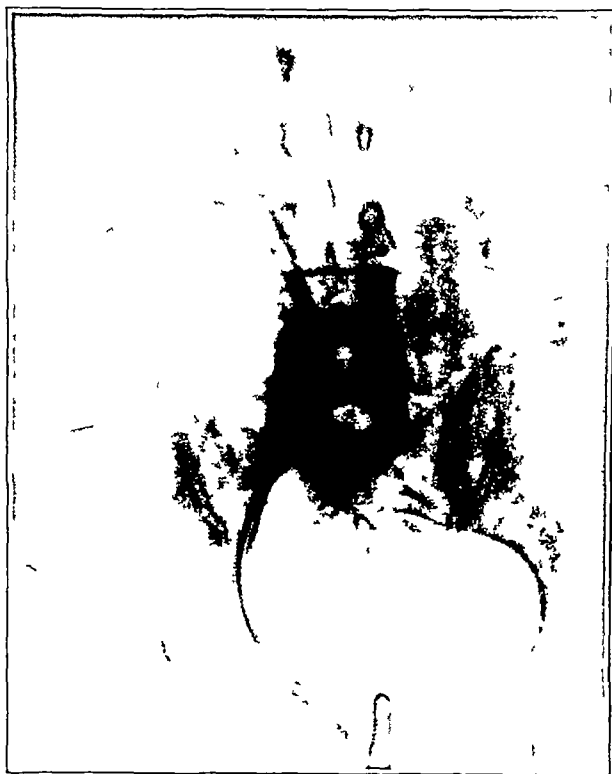


Fig 5—Attempted pyelogram on right side of third aplastic ectopic kidney with lead catheters in place to double kidney above.

During this process the cap at the blind end of the ureteral bud divides into two large branches, a cephalic and a caudal branch, and two or more central smaller evaginations which form the adult calices and straight tubules of the kidney. This particular step constitutes an important factor in the formation of ureteral anomalies.

11 Kirwan, T. I. The Role of the Ureter in the Case of the Genito-Urinary Tract. Am. J. Surg. 4, 322-384 (April) 1902.

If the splitting into branches of the blind end of the ureteral bud is slightly premature or exaggerated and this condition persists, the result will be a cleft or bifid pelvis. If the branches of the ureteral bud begin at a point more caudal or nearer the junction of the ureteral bud with the wolffian duct, a partial or complete



Fig. 6—Same as figure 5, with two catheters withdrawn from double kidney

double ureter results, depending on the proximity to the wolffian duct at which the splitting into these branches takes place. Thus the only difference between a diverticulum of the ureter, bifid pelvis, split or Y shaped ureter, fused ureter, and a complete double ureter is one of degree and is dependent on the location of the division into branches at the cap of the ureteral bud.

Felix¹² states that in lower animals two or more ureteral buds are given off separately from each wolffian duct. In the human embryo, however, only the most caudal one normally develops into a ureter. He believes that a double ureter results from two ureteral buds originating separately from the wolffian duct and developing independently. This theory will not explain the more common phenomena of bifid pelvis, split or Y shaped ureter, or diverticulum of the ureter. Since these can all be explained by the previous embryologic sequence, we are inclined to explain our case in that manner.

REPORT OF CASE

M. W., a Negro woman, aged 52, complained chiefly of pain in the right lumbar region extending down into the right leg. The condition was of five months' duration. There was a frequency of urination up to fifteen times a day—none at night—of two weeks' duration. The patient had had dysuria for three or four years. Her family and past history were irrelevant. She had been married twenty years but had no children; the menopause occurred in 1924.

For the past three or four years the patient had had burning urination which had become worse of late. Five months before examination she was ill in bed with bronchitis and since then had had pain in the right lumbar region, which extended into her right leg. The pain had been very severe for the past two weeks and was accompanied by frequency of urination and difficulty in holding the urine. Attempts to hold the urine caused nausea.

A stricture of the urethra necessitated dilation before a cystoscope would pass. The bladder mucosa showed moderate inflammation and bullous edema in the trigonum.

For the purpose of elucidation the ureters on the right side will be described as 1, 2 and 3, 1 being the lowermost on the interureteral ridge, 2 being the middle orifice on the outside of the interureteral ridge, less than 1 cm. above 1, and 3 being above and median to 2 and median to the interureteral ridge. The relative location of these orifices obviously varied with the degree of bladder distention during observation.

A number 6 catheter passed without obstruction to the kidney through ureter 1. In catheterizing ureter 2, a number 6 catheter met obstruction one third of the way up the ureter. After a number 5 bougie had been passed to the kidney a number 5 catheter passed to the kidney through this ureter. In catheterization of ureter 3, a number 6 catheter passed 11 cm. following preliminary dilation of this ureter.

Sterile specimens were collected from ureters 1 and 2 for culture. From ureter 3 several drops of fluid, believed to be reflux from the bladder rather than urine, were obtained. Specimens were also collected from ureters 1 and 2 for urea



Fig. 7—Pyelogram of left kidney showing bifid type of pelvis with slight amount of shaginess of calices.

and microscopic examination. One cubic centimeter of phenolsulphonphthalein intravenously appeared from ureter 1 in three minutes from ureter 2 in two and a half minutes. No dye was obtained from ureter 3. Cultures of urine from ureters 1 and 2 were negative. A number 6 catheter passed to the left kidney pelvis without obstruction; the observations were negative and function was normal.

Roentgenograms were taken before and after injection of sodium iodide solution through each of the three lead catheters.

¹² Felix, Die Entwicklung des Urogenitalsystems in Keibel und Mall, Handbuch der Entwicklungs-Geschichte 1911 p. 2.

The sodium iodide solution did not pass to the kidney pelvis through the third catheter but returned to the bladder. A pyelogram and a ureterogram were subsequently made on the left side.

First roentgenograms were subsequently made also in ten minutes, twenty minutes, thirty minutes, one hour and six hours after the intravenous injection of iopax.

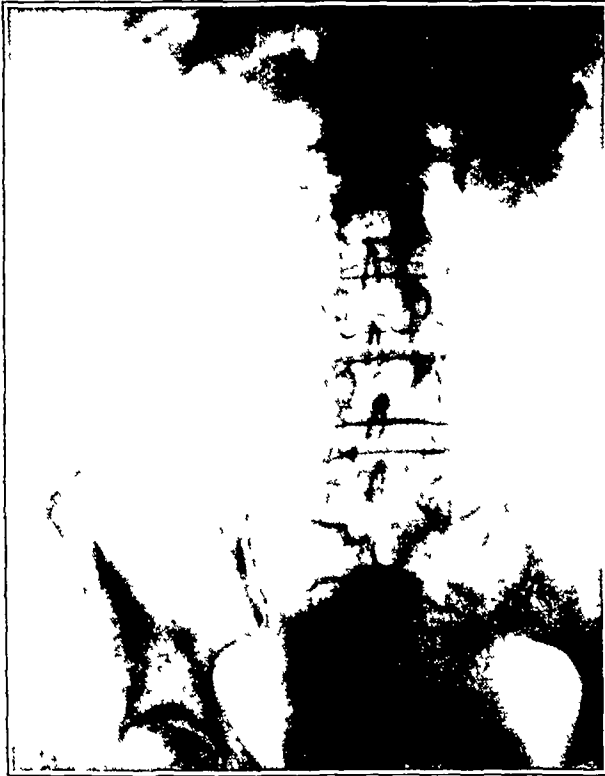


Fig 8—Roentgenogram taken twenty minutes after the intravenous injection of iopax showing the bifid pelvis of the left kidney and the upper third of the left ureter more distinctly than the double kidney on the right side. No evidence of third kidney in this picture. (No shadow is cast with this substance if kidney function is absent.)

COMMENT

The case here presented can be explained embryologically (fig 1) according to the splitting of the single ureteral bud. A pyelogram of the left kidney reveals a

Report of Ureteral Specimen

	Ureter 1	Ureter 2	Ureter 3
Character	Hazy	Hazy	
Urea	3 Gm per liter	9 Gm per liter	
	<i>Phenolsulphophthalein</i>		
Appeared	3 minutes	2½ minutes	No time
Per cent	95	6	0
Time	10 minutes	10 minutes	No time
	<i>Microscopic Examination of Sediment</i>		
	Ureter 1	Ureter 2	
Wet specimen			
Blood cells	18 in high power field	Blood cells 180 in high power field	
Epithelial cells	26 in high power field	Epithelial cells 26 in high power field	
Some debris			

bifid or split pelvis. This is probably the result of the persistence of the primary branching of the ureteral bud which has remained in its embryologic form. In other words, instead of these primary branches joining to form a single normal renal pelvis, they have remained

separate in their most distal portion. This is the simplest and most common malformation.

On the right side, the other extreme occurs. The ureteral bud branched prematurely very close to its origin from the wolffian duct into three main branches, or two main branches and a third sprout from the renal bud.¹³ The lower portion of the wolffian duct, to which the ureteral bud is attached, gradually becomes dilated and forms a portion of the cloaca which is destined to become the bladder. Thus the ureteral bud or ureter is pulled down until it empties into the cloaca. Since the branching of the ureteral bud was very close to the wolffian duct, only a slight further dilatation and growth is necessary to have three separate openings into the future bladder.

Apparently only two of the ureters are connected with kidney tissue. The third ureter seems to end blindly or pass to a possible aplastic, ectopic kidney about the level of the crest of the ilium. There appears to be a "proliferative stimulus" which causes the branches of the ureteral bud to follow the nephrogenic cells upward to form the kidney. It is possible that this stimulus was lacking with the third ureteral bud, either because of insufficient nephrogenic cells or because of the distance between this third ureter and the metanephros.



Fig 9—Same as figure 8 taken thirty minutes after injection of the substance. Other roentgenograms made with iopax did not cast sufficient shadow to warrant including them in this series.

Clinically, the patient has had no discomfort nor symptoms since the routine dilation of the ureters and lavage of the kidney pelvis.

17 East Thirty-Eighth Street

13. Huntington, G. S. The Genetic Interpretation and Surgical Significance of Some Variations of the Genito-Urinary Tract. Harvey Lectures, Series 11, 1906-1907.

OBSTRUCTION OF THE POSTERIOR URETHRAL VALVE IN INFANCY AND CHILDHOOD

A STUDY OF EIGHTEEN CASES *

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Urethral valves are the commonest congenital infra-vesical obstruction and, because they are confined to the prostatic canal, render the condition a male disease. Morphologically these valves may be mucosal ridges, folds, cusps or diaphragms. They are most often attached to the verumontanum and, when so involved, this organ is usually otherwise anomalous. When by location or size, valves produce symptoms, the primary

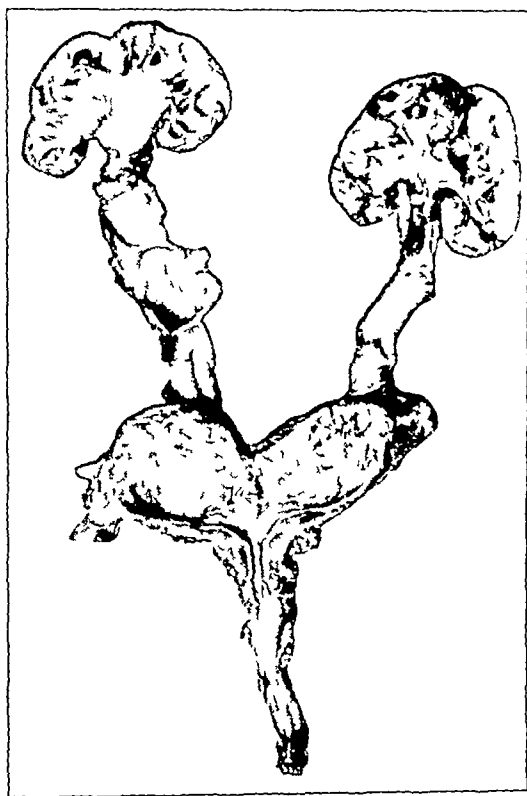


Fig. 1 (case 18).—Greatly enlarged, elongated and anteriorly bifurcated verumontanum in child who died at birth of tentorial tears. Secondary back-pressure, bladder hypertrophy, bilateral ureter dilatation and hydronephrosis are well shown and are especially noteworthy because they developed in utero. In this case the obstructing valves are formed by the anterior bifurcation of the verumontanum.

clinical manifestations are those of obstruction, secondary symptoms are those of uremia. The correct diagnosis is easily made by cysto-urethroscopy. Removal of the obstruction constitutes the treatment. The prognosis is directly proportional to the renal function. A study of eighteen cases of congenital posterior urethral valve obstruction is herewith presented, that all of these patients were children lends particular interest to this lesion.¹

* Read before the Section on Urology at the Eighty First Annual Session of the American Medical Association, Detroit, June 27, 1930.

* From the Department of Urology, Pathology and the Children's Medical Division, Bellevue Hospital, Babies Hospital and New York Nursery and Child's Hospital.

¹ One of these cases (from Bellevue Hospital) was reported previously by Lowsley (footnote 6).

Although Langenbeck² is generally accredited with the original description 128 years ago (1802), Young³ in 1913 was the first surgically to treat the disease. It is noteworthy that of the total of 71 cases reported in the literature to date, only 22 antedated Young's work, these were autopsy observations. Operations were performed in 27 of the 49 reported since Young's original case. With the wider application of urologic methods of diagnosis in juvenile patients with obstructive symptoms or persistent urinary infection, a far higher incidence of urethral valve obstruction will be revealed and, with proper treatment (and such simple treatment), many lives will be saved. Parenthetically it should be added that while valve obstruction will not always be found when indications for complete urologic examination are present, any one of a number of serious or potentially fatal lesions of the urinary tract may be revealed. A liberal attitude toward complete urologic examination in children, particularly when chronic pyuria exists, cannot be overemphasized.

Our present meager statistical data on the incidence of valvular obstruction precludes any estimation of the true ratio of occurrence.

ANATOMY

Structurally, valves may be present only as low ridges, these do not obstruct. More often valves appear as mucosal folds or redundances and in retarding a fluid stream may be cystoscopically observed to balloon into cusp formation. Finally, they may be present as partial or complete diaphragms. In only rare instances, however, have unperforated complete diaphragms been found at autopsy, such a condition is, of course, incompatible with life. On the other hand, the urethral perforation in the diaphragm may be minute, the diameter of a pin, and so cause almost complete obstruction. For convenience, valves have been classified into three types depending on their relation to the verumontanum.

Most valves are contiguous with the verumontanum at some point and usually pass from the anterior end of the verumontanum to the lateral urethral walls (type 1, fig. 1) although in several instances extension from the posterior verumontanum to the bladder outlet has been observed (type 2, fig. 2). Valve segments of the latter type in particular are apt to be multiple, one sometimes finds as many as six or seven folds extending from the verumontanum posteriorly to the bladder outlet. Valves may be unilateral, as I have twice observed, these cause little obstruction. Finally, the valve may be totally independent of the verumontanum, situated either anterior or posterior to this organ (type 3). Such valves are partial or complete diaphragms, occasionally occur on the roof but usually on the urethral floor and, when distended, may simulate a cardiac cusp.

In the presence of valves, the verumontanum is usually anomalous, enlargement and great elongation is the rule. Sometimes the verumontanum extends from the vesical outlet anteriorly for 2 or 3 cm (fig. 1). When the verumontanum bifurcates anteriorly to create type 1 valves, a deep pouch or pocket is often formed at the apex of the fork and because urethral instruments persistently catch in this fossa, passage to the bladder may be exceedingly difficult or even impossible. Such a finding on urethral instrumentation is diagnostically suggestive.

² Langenbeck, C. J. M. *Memoire sur la lithotomie* 1802.
³ Young, H. H. *Practice of Urology*. Philadelphia: W. B. Saunders Company, 292, 1926.

ETIOLOGY

The etiology of urethral valves is unknown. Theorists in this field have believed them to be due to (1) enlargement or hypertrophy of normal urethral folds,⁴ (2) persistence of the urogenital membrane,⁵ (3) anomalous wolffian or mullerian duct developments,⁶



Fig 2 (case 14) — Enormous dilatation of entire urinary tract behind valvular obstruction. The patient was 11 months of age. Destruction of the renal parenchyma by urinary backpressure compression is noteworthy, as is the hemorrhagic decompression cystitis resulting from too rapid emptying of a chronically distended bladder. The morphology of the valvular obstruction merits especial attention. The verumontanum is greatly enlarged, it bifurcates anteriorly to form type 1 valves and extending posteriorly are several deep leaflets forming type 2 valves. The trigon as well as the bladder wall showed marked hypertrophy.

(4) a fusion of the colliculus with the epithelium of the posterior urethral roof. None of these explanations fit all cases.

PATHOLOGY

The pathologic changes in the urinary tract are those common to all infravesical obstructions. A comprehensive understanding of these changes renders simple the correct interpretation of the clinical symptoms and observations, and indicates the requisites of intelligent treatment. The proximal urethra is dilated. Until prolonged backpressure causes muscular decompensation, the bladder wall shows trabeculation, hypertrophy and sometimes inflammation, and may be the site of diverticulum formation. Often trigonal hypertrophy is pronounced. With decompensation, the bladder becomes a large hypotonic bag. Ureteral and pelvic dilatation occur as the disease advances, urinary backpressure as well as inflammatory changes destroy the ureterovesical valve, so that vesicoureteral reflux is demonstrable in

most advanced cases (fig 3). The ureters may become larger than the colon, the renal parenchyma is frequently compressed to a thin shell. Compression nephritis plus infection accounts for the diminution of renal function so uniformly observed as the disease progresses. It is for this reason that prognostic and therapeutic considerations must be translated into terms of renal function.

SYMPTOMS

The symptoms of urethral valve obstruction are (1) those of urethral blockage and (2) those of renal insufficiency or uremia. Since the history must be obtained from a parent in most instances, elicitation and evaluation of the objective symptomatology is often difficult.

Urinary frequency is the most common symptom and is usually present from birth. With the advent of infection, the child may void every twenty to thirty minutes. In many instances a paradoxical or overflow incontinence may keep the child continually wet. These patients in particular are apt to be diagnosed as and treated for enuresis. I have operated in five such cases.

Dysuria or urinary difficulty is due to the diminished urethral caliber and is often distressing. Hesitancy or sluggishness in starting the stream, together with a dribbling flow, are corollaries of dysuria. The observation of the urinary act in one of these little patients with face purple from straining, evincing considerable pain and often manually compressing the abdomen to force out urine, leaves an indelible impression. One of my patients, a boy of 5 years, learned to compress his



Fig 3 (case 7) — Cystographic demonstration of enlarged bladder, dilated ureter and renal pelvis. The upper urinary tract is filled by sodium iodide reflux from the bladder.

bladder over the seat of a chair in much the same manner as an asthmatic patient obtains thoracic compression over the back of a chair. Dysuria may not appear, however, until some months or years after the onset of frequency. In some instances the distressing symptoms of valvular obstruction do not appear until adult life.

4. Tomaschew. N. Ein Fall von emularen Klappen der Harnrohre und vergrößerter Venuela Prostatica. Arch. f. Path. Anat. 1870 pp. 348-365.

5. Bazy. P. Obliteration de l'urètre par une valvule congénitale en forme de diaphragme. Bull. et mem. Soc. de chir. de Paris 29, 1903.

6. Lowley. O. S. Congenital Malformation of Posterior Urethra. Ann. Surg. 60, 1914.

7. Watson. E. M. The Structural Basis for Congenital Valve Formation in the Posterior Urethra. J. Urol. 7, 371-381 (May) 1922.

Congenital Valvular Obstruction of

Case	Age	Chief Complaint	Past History	Gastro-Intestinal Upsets	Fever	Urinalysis					Creat. + Inlet	Blood Pressure	Physical Examination
						Pus	Blood	Albumin	P S P	N P N			
1	5 yr	Low abdominal pains frequency dysuria day wetting enuresis since infancy	Negative except always wet	0	0	+	0	0	3/20	29.5	1.5	100/0	Fair development small genitalia bladder not felt
2	6 yr	Frequency enuresis wetting of clothes since birth	Negative except always wet	0	0	0	0	0		30	1.4		Poorly developed clothes wet
3	7 yr	Frequency and moderate dysuria since birth hematuria once	Negative	0	0	Occasionally	Occasionally	0	20/5	29	1.4	95/2	Slight pain in right loin pinpoint meatus bladder not felt
4	11 yr	Complete incontinence pyuria frequency always wet	Pyuria always poor urinary control	Occasionally	Occasionally	++++	0	Very faint trace	(1) 0 0 (2) 7 2	74	2		Underdeveloped and nourished looked sick clothes wet residuum 2 oz motor and sensory loss sacral 1 to 3
5	22 mo	Urinary difficulty since birth acute retention with distended bladder past 10 hours	Acute retention relieved by catheter once 11 mo age urethral discharge since	++	+	++							Currently distended bladder catheter stopped in prostatic urethra
6	10 mo	Dysuria since birth bladder always distended	Pyuria and distended bladder since birth	+++	++	++++				30	2.5		Bladder palpable in struments stopped in posterior urethra
7	2 yr	Dysuria pyuria intermittent fever frequency abdominal pains repeated acute retentions since birth	Always had bladder trouble	++	+++	+++			(1) 0 0 (2) 10	80	3.4	85/62	Sick bladder distended 2 inches above pubis instruments stopped at bladder outlet
8	11 yr	Bladder pain nocturia 2 or 3 times frequency	Negative	0	0	+			21 19	31 9	1.4	104/12	Well developed bladder not enlarged no residuum
9	10 yr	Pain on both sides lower abdomen frequency every 20-30 minutes always wets bed dysuria worse past 3 mo	Has always had enuresis	+	0	++			42/22	39.5 30.8		126/80	Phimosis distended abdomen moderate tenderness right lower quadrant residuum 10 cc
10	3 yr	Frequency dysuria enuresis always wet since birth	Urinary symptoms becoming progressively more severe	0	0	0			60	23		98/70	Bladder not distended residuum 10 cc
11	7 yr	Frequency, enuresis always wet	Always wet	0	0	++		Very faint trace	50	29.1		94/70	Emaciated pale residuum 2 ounces
12	10 yr	Enuresis bed wetting	Nocturnal enuresis five years wets clothing frequently	0	0	+	0	Trace		30		118/80	Well developed tenderness over both kidneys on deep pressure residuum 1 oz clothes wet cystoscope stopped in prostatic urethra bladder not felt
13	3 yr	Frequency, acute retention	Acute urinary retention twice previously occasional enuresis and wetting of clothing	0	0	+	0	+++	30/20	23.5			Bladder distended to 2 cm below umbilicus no renal tenderness cystoscope caught in posterior urethral pocket
14	11 mo	Constipation	No urinary history brought to hospital because of constipation distended bladder directed attention to urinary tract	+	0	0	0	++++	12	42			Bladder distended to umbilicus greatly enlarged ureters palpable thought to be constipated bowels anemic poorly developed
15	1 yr	Uremia	No history child brought to hospital in uremia										Admitted to hospital in uremia died shortly without complete examination
16	11 hr	Died 11 hours after birth											Anencephalic monster
17	3 mo	Distended bladder since birth		+++	+++	+++	+						Distended bladder both kidneys felt
18	1 hr	Died immediately after birth of cranial injury with tentorial tears											

* All males † P S P Percentage 2 hour phenolsulphonphthalein test N P N nonprotein nitrogen expressed in mg per hundred cubic cent

*the Posterior Urethra in Childhood**

Roentgenogram	Cystogram	Cystoscopy	Treatment	Complications	Cause of Death	Follow Up of Autopsy
Negative	Normal	Small hypertrophic median prostatic lobe half iris diaphragm on urethral floor anterior to verumontanum dilated posterior urethra in which instruments caught marked trabeculation hypertrophic trigon deep bas fond ureteral catheterization negative	Refused marked improvement following urethral dilation			Patient lost sight of
Negative	Normal	Trabeculation and trigonal hypertrophy +++ extending from posterior verumontanum to left margin of the vesical outlet was a large deep valve right side normal	None improvement following urethral dilation			Improvement following dilation
Negative	Slightly enlarged bladder with funnel outlet	Trabeculation ++ dilated bladder outlet and posterior urethra verumontanum normal with right valve extending anteriorly to urethral wall spacious urethra	Refused			Patient lost
Lateral deviation of sacrum to right	Irregular bladder enlarged with funnel outlet	Trabeculation extreme diverticulum of posterior wall dilated bladder outlet with several coarse valve leaflets passing from posterior verumontanum to bladder outlet	None left hospital against advice	Diverticulum		Patient lost
0	0					Patient symptomatically cured by dilation
Negative	Dilated irregular bladder	Moderate trabeculation and trigonal hypertrophy verumontanum elongated and enlarged with two thick valves passing from posterior verumontanum into vesical outlet	Refused		Uremia	None
Negative	Large bladder bilateral reflux greatly dilated upper tract	Extreme trabeculation and trigonal hypertrophy small diverticulum of posterior wall gaping ureter mouths large elongated verumontanum with multiple type 2 valves	None developed fatal diphtheria day before scheduled operation	Diverticulum	Diphtheria	Autopsy refused
Calcified glands to right of sacro iliac joint	Normal no reflux	Normal bladder dilated posterior urethra enlarged elongated inflamed verumontanum extending from within vesical orifice anteriorly 3.5 cm ending in coarse type 1 valves with deep pocket in the bifurcation instruments caught in this pocket repeatedly	Excision by electric cutting current			Urination free and easy no frequency
Negative	Normal	Trabeculation ++ elongated verumontanum with semidiaphragm cusp on floor 3 mm anterior to verumontanum cusp made to balloon out in irrigating fluid difficult instrumentation	Excision by electric cutting current	Postoperative psychosis anesthesiophobia		Symptomatic relief following original examination (cystoscopic urethral dilation) cured by operation
Spina bifida occulta defect fifth lumbar	Short funnel filling of posterior urethra	Marked trabeculation moderate trigonal hypertrophy dilated posterior urethra verumontanum elongated enlarged and anteriorly forks into type 1 valves instruments caught in pocket of bifurcation	Excision by electric cutting current			Free urination with less frequency marked improvement following cystoscopy dilation
Negative	Normal	Trabeculation ++ with slight trigonal hypertrophy dilated urethra behind verumontanum with multiple lateral valves extending anteriorly from sides of verumontanum	Excision by electric cutting current			Still some frequency but marked improvement
Spina bifida occulta fifth lumbar down	Normal	Coarse trabeculation with deep cellulules marked trigonal hypertrophy dilated posterior urethra with median bar formation and valves extending anteriorly from verumontanum deep pocket of urethral floor in front of verumontanum bifurcation	Excision of median bar and valve excision by cutting current			Symptomatically cured
Negative	Normal	Hypertrophic bladder wall and trigon coarse trabeculation dilated posterior urethra with deep valves extending anteriorly and posteriorly from verumontanum deep pocket anterior to verumontanum bifurcation	Refused temporarily relieved by indwelling catheter			Refused treatment
Negative	Large bladder bilateral reflux with angulated ureters funnel outlet	Coarse trabeculation with many deep cellulules gaping urethral orifices marked trigonal hypertrophy dilated posterior urethra and vesical outlet with valves extending anteriorly and posteriorly from verumontanum	Indwelling urethral catheter cystostomy	Uremia	Uremia	Died 24 hours following cystostomy autopsy confirmed cystoscopic observations and urograms marked hemorrhagic decompression cystitis renal parenchyma reduced to thin shell by urinary backpressure
					Uremia	Type 2 posterior urethral valves with bladder dilatation and hypertrophy bilateral hydro-nephrosis hydro-ureter and renal parenchyma reduced to thin shell
					Monster	Anencephalic monster long large verumontanum with type 1 valves bladder and upper tract greatly dilated
					Uremia	Crescentic mucosal fold over lay bladder outlet verumontanum large with many type 1 valves enormously dilated ureters and pelvis
					Birth injury	Long verumontanum type 1 valves greatly hypertrophied bladder with dilated ureters and hydronephrosis of especial interest because of intra-uterine development

*meters creatinine expressed in mg. per hundred cubic centimeters

Chronic distention of the bladder is often visually manifest by a protuberance of the lower part of the abdomen, frequently the mother or the patient has palpated the vesical mass. Such distention usually causes lower abdominal pain, which is often mentioned as an outstanding symptom. With ureteral and pelvic urinary distention, lateral abdominal or loin pain is sometimes present and in conjunction with frequency, dysuria and pyuria commonly leads to the diagnosis of pyelitis. Renal pain on voiding always suggests ureteral reflux.

Later, as renal damage and functional diminution become manifest, the symptoms are those of uremia in progressive stages. Headache, irritability or languor may be the only neurologic symptoms. Repeated and often severe gastro-intestinal disturbances with anorexia, nausea, vomiting, failure to gain or even loss of weight may totally misdirect attention to the alimentary tract. In the terminal stage, the patient either lapses into fatal uremic coma or dies of an intercurrent infection. Debilitated, these patients are particularly prone to acute respiratory or urinary infections, such infections are usually fatal. Because of the clinical picture and laboratory observations, obstruction of the urethral valve is most often diagnosed as chronic pyelitis, chronic interstitial nephritis or polycystic renal disease.

DIAGNOSIS

The history and physical observations suggest the diagnosis, cysto-urethroscopy confirms it. A partially or completely distended bladder is commonly found. The kidneys are often enlarged and, as I have seen, both ureters palpable. A dry tongue is not the rule until uremia is well developed.

Laboratory examination shows urinary infection in most instances. In advanced disease the urinalysis most often leads to the diagnosis of chronic interstitial nephritis, and a high blood nitrogen retention, diminished blood carbon dioxide combining power and reduced output of phenolsulphonphthalein are usually interpreted as diagnostically confirmatory of nephritis. On the other hand, in four of my cases examined because of dysuria and "enuresis," urinary infection and advanced urinary tract changes had not occurred, urinalysis and chemical examination of the blood were essentially normal.

The correct diagnosis is made by cysto-urethroscopy, cystography often gives considerable additional information and should precede cystoscopy. When the bladder residuum is estimated to be more than 3 ounces (90 cc.), gradual decompression should be instituted. In the diagnosis and treatment of urethral valve obstruction, the same basic principles applied to adult

prostatic patients must be even more assiduously observed in children. Decompression and continuous drainage of the bladder usually can be carried out with a number 6 or 7 F ureteral catheter indwelling in the urethra. When the condition of the patient permits, as indicated by the various clinical and laboratory manifestations of improvement, a cystogram should be made.

With 5 per cent sterile sodium iodide the bladder is filled to the point of moderate distention and roentgenographic exposures (preferably stereoscopic) are made. The resultant picture usually shows a distended bladder with irregular wall outlines, sometimes diverticula and by reflux up one or both ureters, the upper tract may be delineated (fig 3). Hydro-ureter and hydronephrosis are commonly found. Ureteral elongation results from urinary backpressure and is roentgenographically evident by kinking, angulation, torsion or sagging of the ureter. The vesical outlet merits special attention because with valve obstruction a funnel shaped shadow extending downward for a centimeter or more is frequently seen. This is due to dilatation of the bladder neck and posterior urethra (fig 4).

With the cystographic data in hand, one proceeds to cystoscopy. Following dilation of the urethra by the passage of steel sounds, passage of the infant cysto-urethroscope is usually easy. On the other hand, instrument tips frequently catch in valve pockets and make instrumentation extremely difficult or impossible. If a diaphragm obstruction with only a small aperture is present, considerable precystoscopic instrumental dilation may be required.

After the cystoscope has been passed, the bladder picture is noted. In one of my cases, the instrument could be passed well into the ureters. Examination of the posterior urethra is usually easy because of obstructive dilatation. This permits an excellent view of the verumontanum and valves

and, by manipulation of the irrigating current, most valves can be made to balloon out. Cystographic and cystoscopic observations render ureteral catheterization and divided renal function tests unnecessary.

DIFFERENTIAL DIAGNOSIS

Valvular obstructions can easily be differentiated from chronic interstitial nephritis and polycystic disease by urologic examination. Other conditions to be ruled out by cysto-urethroscopy are congenital submucous fibrosis of the vesical outlet (so-called contracture²), neuromuscular disease (cord bladder) or hypertrophy of the verumontanum unassociated with valve formation. While all of these lesions may symptomatically

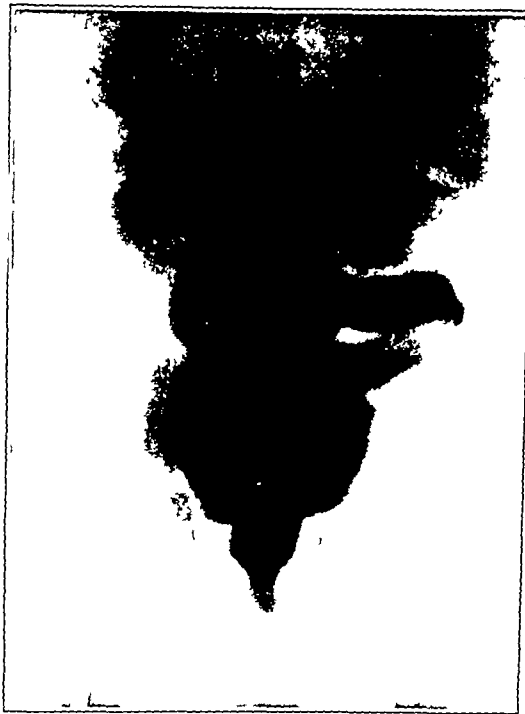


Fig 4 (case 14)—Cystogram illustrating practically all of the characteristic backpressure urinary tract changes that may result from valvular obstruction. The posterior urethra is greatly dilated behind the obstruction the bladder is dilated and irregular both ureters are greatly enlarged elongated and tortuous and finally—although it does not show distinctly—there is marked hydronephrosis. This patient is 11 months of age and still had uninfected urine a finding quite different than one would expect.

simulate valve obstruction, the identification of valve blockage is easy

TREATMENT

Removal of the obstruction constitutes the treatment but as previously indicated this should not be attempted until the condition of the patient warrants surgical attack. If the residuum is over 3 ounces, gradual decompression and continuous bladder drainage should be carried out until functional stability has been established. If the residuum is less than 3 ounces, preliminary drainage for a few days is excellent practice. With continuous drainage, the blood on chemical examination, the phenolsulphonphthalein output and the general physical condition of the patient will in the course of a few days or weeks attain a degree of improvement which further drainage does not augment. Operation may then be carried out. If the patient does not tolerate the indwelling urethral catheter, cystotomy decompression and continuous drainage must be resorted to. My experience with indwelling urethral catheter drainage in older boys has paralleled that in adults, but in very young boys maintenance of this form of drainage may be exceedingly difficult. During the preliminary drainage period, water in abundance and rest is the best treatment, urinary antiseptics are not needed.

Several methods of valve removal have been advocated. Perineal approach is unsatisfactory and unnecessary. If the urethra is impassable or cystotomy drainage has already been instituted, a suprapubic attack may be carried out. Young has satisfactorily removed valves with his miniature punch, others⁹ have destroyed valves by fulguration and in some instances the valves have been ruptured by the passage of steel sounds. I have successfully used the electrotome cutting current with which, under visual guidance, one can excise the obstructing valve leaflets. At the same time the size of the verumontanum can be reduced if it is abnormally large. Reference to the accompanying tabulation of our cases indicates that this method gives thoroughly satisfactory results. There is a minimum of surgical shock, in young boys the procedure is carried out under gas anesthesia and, in our experience to date, postoperative bleeding or other undesirable sequelae have been negligible. On the other hand, we have been fortunate in getting our operative cases relatively early.

Fluid in abundance is the best medicine following operation. If the obstruction has been properly removed, urination will be free. The administration of urinary antiseptics at this time is unnecessary. Anemic children or those in whom the need of transfusion seems at all likely are best given the blood before operation.

PROGNOSIS

The prognosis is based on the degree and duration of the obstruction and is directly proportional to the renal function and damage. Fortunately the low renal function of compression nephritis is not always as ominous as the initial observation might suggest for, with continuous preliminary drainage renal function not infrequently returns to a satisfactory degree. Therefore a somewhat more accurate prognosis can be rendered after one has observed the quantitative improvement in renal function following continuous preoperative drainage.

SUMMARY

With more careful attention to urologic symptoms and with wider application of technical urologic diagnostic procedures in children, a far greater incidence of urethral valve obstructions (as well as numerous other forms of serious urinary tract disease) will be found. The valves are congenital, the embryonic mechanism of their formation is unknown. Symptoms are those of infravesical obstruction plus renal damage. The diagnosis is easy to make if one will employ cystography and cysto-urethroscopy. A careful preoperative treatment with gradual bladder decompression and continuous drainage when indicated together with a large fluid intake is imperative for successful surgical results. Removal of the obstructing valves by the cutting current is strongly advocated because (1) it may be carried out under vision, (2) there is a minimum of surgical shock or disturbance of the urinary tract after operation, and (3) thoroughly satisfactory results are obtainable.

33 East Sixth-Eighth Street

SOLITARY SEROUS RENAL CYSTS

WITH A STUDY OF ROENTGEN OBSERVATIONS*

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AND

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Each year brings increasing numbers of case reports of solitary serous renal cysts. In 1920 Kretschmer¹ collected but forty-seven cases reported in the literature, adding one of his own. Only seven years later, Carson² gathered 142 plus 3 of his own, and in the few months that elapsed before his article was published, 6 new cases had cropped up. Today more than 160 cases have been reported, and whenever this condition is discussed, new cases, not reported in the literature, are mentioned by those present. Löffler,³ in introducing four of his cases, writes "Retention cysts of the kidney occur as solitary and multilocular cysts and are frequently found by the pathologist. The clinician observes them less frequently because, in themselves, they produce no pain." Branch,⁴ in a recent article, states that pathologists see these cysts in from 3 to 15 per cent of routine autopsies, and he stresses the fact that he refers only to true solitary serous cysts at least 4 or more centimeters in diameter, and not to small retention cysts. It is likely that with the numerous cases being reported diagnostic acumen may increase so that, as in the case of congenital bilateral polycystic kidneys, which a decade ago were still uncommon enough to warrant reporting or as in the case of diverticulum of the bladder, when in the year 1906 only five cases had been reported in the United States in the near future more cases will be seen and discussed, and the much flaunted idea of rarity will not deter one from venturing a preoperative diagnosis of solitary renal cyst. Though the condition is certainly uncommon clinically it is not as rare as originally believed, even though nearly every article on the subject begins by stressing its rarity.

* Read before the Section on Urology at the Eighty First Annual Session of the American Medical Association Detroit, June 27, 1930.

1 Kretschmer H. L. J. Urol. 4: 567 (Dec.) 1920.

2 Carson W. J. Ann. Surg. 87: 250 (Feb.) 1928.

3 Löffler I. Ztschr. f. urol. Chir. 20: 407 1926.

4 Branch C. F. J. Urol. 21: 451 (April) 1929.

9 Randall Alexander. Congenital Valves of the Posterior Urethra. Ann. Surg. 73: 47 (April) 1921. Hinman Frank, and Kutzman. Congenital Valvular Obstruction of the Posterior Urethra. J. Urol. 14: 71 112 (Aug.) 1925.

Some confusion still exists as to the roentgenographic and urographic observations in this condition. George Gilbert Smith,⁵ in 1924, said, "There is relatively little known as to the pyelographic study of these kidneys." Clute⁶ in the same year, said "The appearance of a round swelling arising from one pole of the kidney, separated from or overlying a normal pelvis is the typical pyelogram." Eisendrath⁷ writes "If the cyst does not displace the renal pelvis, and this is true of most of the cases, the pyelogram will not reveal any changes from the normal." Young⁸ states that no solitary cyst has been seen at the Brady Institute and that pyelography should be done, "though we are unable to give any statistics as to its diagnostic value." More recently however, Colston⁹ described a case of solitary cyst and papillary cystadenoma seen at the Brady Institute.

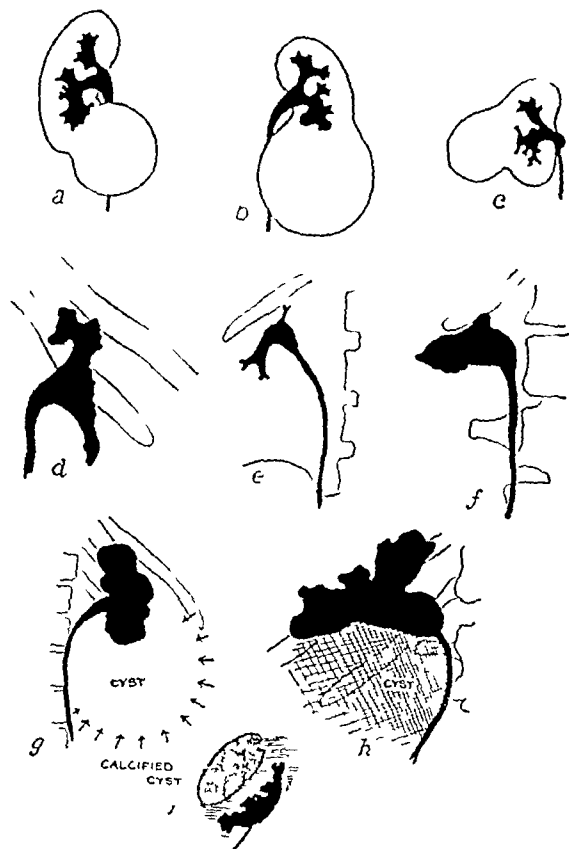


Fig 1—Pyelographic tracings of solitary serous renal cysts. a, b and c, blunting of calices adjacent to cyst (McKim and Smith). d, abbreviation of middle calix (Brasch). e, absence of middle calix, upper only partially filled (Louis Smith). f, cylindrical pelvis, only an upper abbreviated calix remains (Brasch). g, hydronephrosis and displaced ureter (Clute). h, pelvic axis displaced horizontally and pushed upward (Brasch). i, calcified cyst, pelvic dilatation, flattened calices (Kirmm).

Recently we had a case in which the pyelogram was so unlike any we had ever seen that we examined the literature in an effort to draw some simple definite conclusions as to the status of roentgenography and urography in this condition. As early as 1911 Brasch suggested pyelography in the diagnosis of solitary cyst and his first book on urography shows several pyelograms. Schulman,¹⁰ in 1916 reported a case in which

pyelography was done and a diagnosis of hypernephrosis was made. He did not show or describe his roentgen observations. Kretschmer's pyelogram in 1920, was still one of the few on record and showed a hydronephrosis. Since that time pyelography with other refinements of urologic diagnosis has been more extensively utilized. A simple explanation will clear the needless confusion that exists regarding pyelographic changes. Solitary cysts regardless of the disputed theories of origin involve the cortex. Pyelographic observations will depend on the relationship of the cyst wall to the pelvis or its calices to any changes produced in the course or lumen of the ureter by virtue of pressure from a large cyst, and to any change in the position of the kidney from pressure or increased weight. Naturally, those cysts arising in the upper pole or middle of the kidney will be more apt to produce pelvic pressure changes than those arising in the lower pole and growing downward away from the kidney pelvis. The last group is most common and more likely to produce pressure changes on the ureter with resulting pyelectasis.

From those reported we have summarized the more common characteristics of roentgen observations and have had tracings made of pyelograms illustrating the representative groups. These are six in number: (1) normal, (2) hydronephrosis, (3) compression of the calix or the true pelvis, (4) change in position and axis of the kidney, (5) the outline of the cyst and (6) calcification of the cyst wall.

1 The pyelogram may be normal. If the cyst does not impinge on the pelvis there will naturally be no compression of the pyelogram. This of course is true in the great majority of small cysts. We do not believe

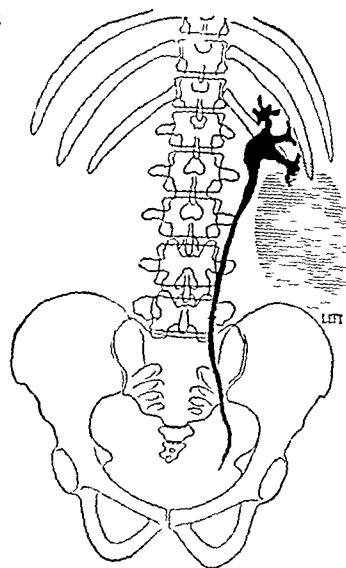


Fig. 2 (case 1)—Lower pole cyst only slight blunting of inferior calix

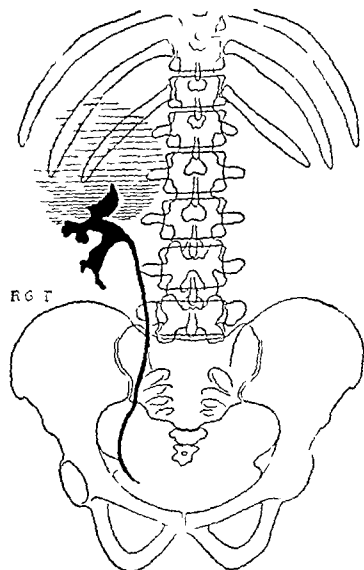


Fig. 3 (case 2)—Upper pole cyst definite blunting of superior calix

5 Smith G. G. Boston M. & S. J. 190: 691 (April) 1924.
6 Clute S. Clin. North America 14: 1453 1924.
7 Eisendrath D. N. and Rolnick H. C. Textbook of Urology for Students and Practitioners Philadelphia J. B. Lippincott Company 1928.
8 Young H. H. and Davis D. M. Young's Practice of Urology Philadelphia W. B. Saunders Company 1926.
9 Colston J. A. J. Urol. 19: 285 (March) 1928.
10 Schulman M. New York M. J. 104: 218 (July 29) 1916.

common in those large enough to cause clinical symptoms, for pain is almost invariably due to pressure changes and the average diameter of such cysts, according to McKim and Smith,¹¹ is 15 cm. Conversely, the fact that a cyst is small does not necessarily mean that

association with or independent of flattening of the calices there may be similar infringement on some other portion of the renal pelvis. Occasionally this gives rise to a cylindric pelvis. Blunting of calices was seen in all three cases of McKim and Smith and is probably

one of the earliest recognizable pyelographic changes. With more pressure retraction of calices is seen and is one of the most common observations. Flattening of the pelvis without changes in the calices may occur if the cyst arises on the mesial kidney border.

4 A change in the position and axis of the kidney as a result of increased weight on one pole is given by Braasch¹³ as one of the three pyelographic deformities produced (fig 1 h). In his book he stresses (a) abbreviation of adjacent calices (b) compression and flattening of the adjacent portion of the renal pelvis and (c) a change in the position and axis of the kidney.

5 The outline of the shadow of the cyst itself is the roentgenographic observation of greatest importance from the frequency of its occurrence and from its diagnostic value. This has often been discerned distinctly in close relationship to the kidney and frequently displaced ureter.

The relative difference in density of the typically large, rounded shadow to adjacent solid organs suggests its cystic nature and is clearly brought out in cases in which the tumor overlies the kidney,

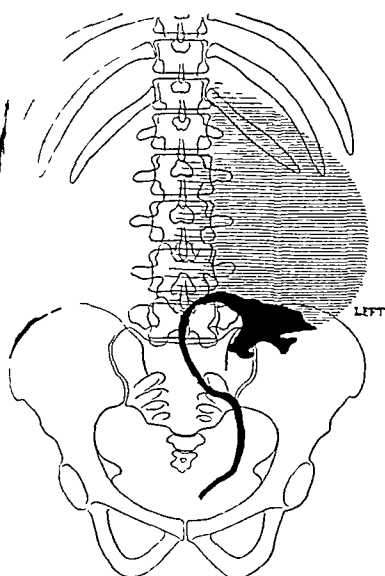


Fig. 4 (case 3)—Upper pole cyst change in position and axis of kidney and pressure on superior pelvic outline; ureter displaced.

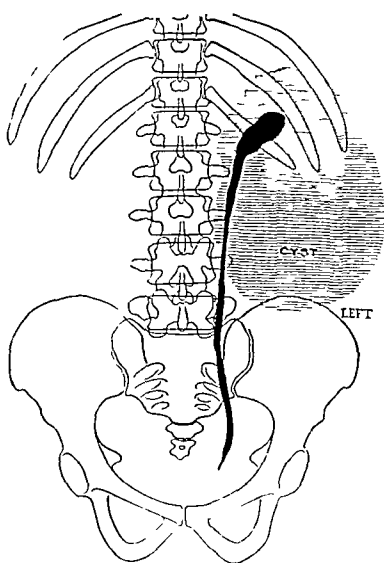


Fig. 5 (case 4)—Cyst involving entire anterior wall of kidney from pole to pole; renal pelvis with all calices obliterated.

the pyelogram will always be normal. Several of the most marked defects have been produced by small cysts growing near and pressing early on the pelvis. Dr. Louis Smith¹² describes a case showing absence of the middle calix and an upper calix only partially filled caused by a cyst 1 by 1.5 by 3 cm. in the upper pole (fig 1 e).

2 Hydronephrosis is the most common deformity due to the frequency of the lower pole cysts (fig 1 g). This is unfortunate in that it undoubtedly obscures early and slight flattening of the renal pelvis so valuable in diagnosing this condition. It is this fact that has undoubtedly given rise to the erroneous idea that the pyelogram is usually normal. A secondary hydronephrosis is usually caused by tumors which displace or obstruct the ureter, interfering with drainage; such cysts are usually large enough to give other diagnostic clues. Even in this type of deformity, we feel that there should often be some direct pressure change on the pelvis or calices, which, even though slight, should be sought and considered in evaluating the various points of information. It would be unfair for us to say that some of the pyelograms shown in the literature as normal or with simple hydronephrosis did show localized pressure changes, as it is impossible to judge these reproduced pyelograms, and for this reason we have had the artist make skeletal tracings of our pyelograms to show changes that would be lost in the reproduction on lantern slides or on the printed page.

3 Compression of the pelvis nearest the cyst is a most suggestive feature in some pyelograms. There may be slight flattening or blunting of the adjacent calix or calices (fig 1 a b c). Abbreviation may be more marked and frequently one or more calices are completely obliterated (fig 1 d e f). One of our cases was unusual in that all calices were absent (fig 5). In

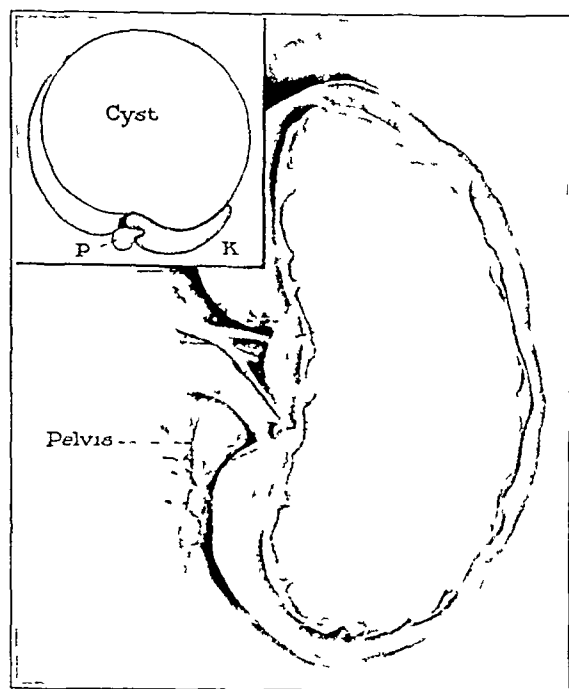


Fig. 6 (case 4)—Relation of cyst to anterior renal wall and bed remaining after partial resection of cyst; kidney was not removed at operation.

allowing the latter to show through quite clearly. We cannot give statistics as to its frequency as the literature

11 McKim C F and Smith P C. *J Urol* 12: 633 (Dec) 1924.
12 Smith L D. *Illinois M J* 52: 291-295 (Oct) 1927.

13 Braasch W F and Hager B H. *Urography*. Philadelphia: W B Saunders Company, 1927.

is vague on roentgenographic details but we believe that a careful search will show the larger cysts in most cases. They were seen clearly in all ours and in many cases reported in recent literature. The increasing frequency of this finding in more recent years is probably due to improvements in modern roentgenographic technique.

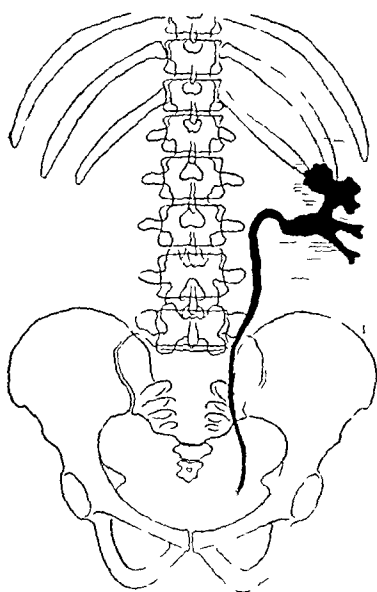


Fig. 7 (case 4)—Five weeks after partial resection of cyst; note renal ptosis and dilatation of superior calyx; compare with figure 5 before operation.

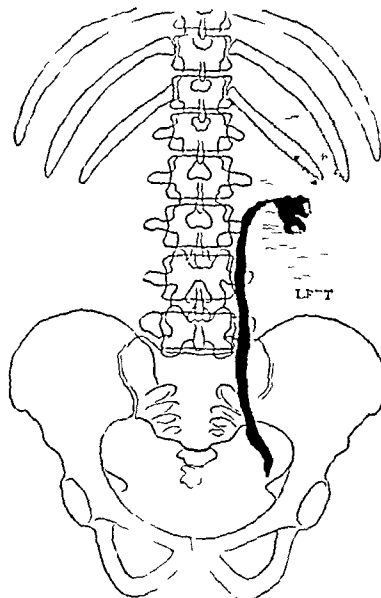


Fig. 8 (case 5)—Upper pole cyst filled with blood; patches of calcification in wall; upper calyx absent.

6. The shadow produced by calcification of the cyst is an interesting but less common finding. It was seen to best advantage in a case described by Kirwin¹⁴ (fig. 14).

Another diagnostic feature was utilized by Ormond¹⁵ in diagnosing a solitary serous cyst. He was able to show that the slightly dilated renal pelvis moved downward with the palpable abdominal mass, pyelograms being taken before and after applying downward pressure on the tumor with the hand. This fact associated the mass of lesser density with the kidney proper and enabled him to make a correct preoperative diagnosis.

These six features characterize roentgen observations in cases found at operation to be solitary serous renal cysts. Prior to 1923 only seven correct preoperative diagnoses had been made out of ninety-four cases collected by Harpster¹⁶. Of the seven, three were made from plain roentgenograms. Since that time quite a number have been correctly diagnosed, but unfortunately exact figures cannot be given because most reports fail to state whether a preoperative diagnosis had been ventured. However, the diagnosis is even today only too often made at operation. It is to be hoped that, with knowledge gleaned from a discussion of roentgenographic observations, diagnostic skill will increase.

Cases with obliteration or marked retraction of the calices are usually diagnosed, and quite naturally, as neoplasms. This is especially true with small cysts. Solitary cysts are, and present the pyelograms of, kidney tumors. Of importance in ruling out neoplastic

growths is the absence of bleeding. Hematuria has occurred in these cases but usually because of some associated pathologic condition as stone or chronic nephritis. Function is usually normal or only slightly reduced with solitary cyst. On palpation of large cyst a sense of elasticity may be determined. Neoplastic changes frequently cause as the earliest deformity elongation, rather than abbreviation of the calices. As a neoplasm enlarges toward the periphery it stretches the calyx with it so that elongation is accompanied by narrowing. Bizarre distortion may occur as a result. A neoplasm as large as the usual cyst observed clinically is likely to cause extensive pelvic deformity.

Pyelography can never replace a careful history, physical observations, and other urologic data in the diagnosis of cyst. Nor should it be used except as an adjunct to other observations in the diagnosis of any other renal condition. However, with compression seen in the pyelogram kidney involvement should be suspected though it may not be interpreted correctly, and exploration should be considered. If the outline of the cyst is seen near or overlying the kidney a preoperative diagnosis can often be made, especially if there are pyelographic pressure changes.

At operation, resection of a wedge-shaped portion of renal tissue with the cyst is the ideal treatment. The cyst is characteristically attached firmly to the adjoining parenchyma and can seldom be shelled from its bed. Learning dissection is crude at best and more likely to be followed by secondary hemorrhage than the removal of a portion of the kidney with the cyst wall and the bringing together of the resulting V-shaped defect by approximation sutures.



Fig. 9 (case 5)—Blood-filled solitary cyst removed at operation. Kidney and cyst have been laid open by longitudinal incision.

If the growth is large or multiple, and if resection should necessitate too great a loss of renal tissue, the cyst may be cut off flush with the renal border and its base cauterized. Following either of these procedures, the kidney should be sutured in normal position to prevent displacement in the resulting cavity left by the removal of a large cyst. Nephrectomy has been fre-

¹⁴ Kirwin, T. J. *J. Urol.* 15: 273 (March) 1926.
¹⁵ Ormond, J. K. *Am. J. Surg.* 6: 241 (Feb.) 1929.
¹⁶ Harpster, C. M., Brown, T. H., and Velcher, A. *J. Urol.* 11: 157 (Feb.) 1924.

quently utilized in the past but unless an associated malignant condition is suspected or parenchymatous damage is too great, more conservative surgery is indicated.

We are presenting brief histories of six cases, in five of which a tentative diagnosis of solitary renal cyst was made before operation as a result of roentgenographic data. In one case a diagnosis of renal tumor was made before and at operation, but pathologic study revealed a blood-filled cyst.

REPORT OF CASES

CASE 1—S C, a man, aged 70, was admitted to the Presbyterian Hospital in the service of Dr. Oberhelman, complaining of attacks of pain in the left loin radiating anteriorly to the groin. Symptoms were of only a few days' duration though a year before he had suffered painful attacks on the right side which were described as heavy, pulling sensations. No hematuria was present.

Examination was essentially negative. At cystoscopy we discovered a stone in the left intramural ureter but when roentgenograms were made (fig. 2), in addition to this calculus was seen the shadow of a cyst the size of an orange overlying the lower pole of the left kidney. The pyelogram itself was practically normal though there was a slight blunting of the inferior calyx and some flattening of the inferior pelvic border. The stone passed spontaneously and the cyst was resected at operation.

In this case the pyelogram showed but little abnormality because the cyst was small did not encroach on the pelvis to any extent and occupied the lower pole but the presence of the cyst was clearly seen and permitted of a preoperative diagnosis.

CASE 2—N R, a man aged 58, was admitted to the Presbyterian Hospital complaining of pain in the back over the right kidney for two weeks. Epigastric fullness had been noted for many years. The dull backache was aggravated by sharp exacerbations with radiation of the pain anteriorly. No hematuria had been observed.

Repeated plain roentgenograms with catheters in situ suggested a calculus in the right ureter but it was not until pyelography was utilized that the true pathologic condition was discovered. The roentgenogram (fig. 3) showed a distinct deformity of the right superior calyx, which was somewhat enlarged and curved on its upper part as if by pressure from above. A second film repeated this deformity and showed retention of almost all the solution in the kidney which was pushed down to the third and fourth lumbar spines. A globular shadow the size of an orange lay over the upper pole of the kidney and was apparently causing the pyelographic defect. This shadow was not heeded until the pyelogram was made. Function tests and urinalysis were normal.

A diagnosis of serous renal cyst was confirmed by operation. The pyelographic change was one of blunting of a calyx and it is interesting to compare this pyelogram with that of case 1 in which a cyst of the same size situated at the lower pole caused practically no deformity.

CASE 3—Mrs. R B, Negro, aged 36, was admitted to the Presbyterian Hospital in the service of Dr. Bevan complaining of abdominal swelling, dull backache and bearing down sensations. The symptoms followed the birth of a child, four years before. No hematuria had ever been present. Elsewhere a diagnosis of ovarian cyst had been made two years before.

Examination revealed a cystic mass occupying the entire left half of the abdomen. It moved with respirations and the kidney could not be palpated. Air inflation of the colon indicated a retroperitoneal position of the mass. Pyelography (fig. 4) revealed a distorted kidney pelvis at the level of the fifth lumbar spine overlying the iliac crest. It was elongated as if by compression from above by the large shadow of the cyst which was clearly seen. Urinalysis and function tests were normal.

At operation the large solitary serous cyst was resected from the upper pole and the prolapsed kidney was secured in good position by sutures. The pyelogram falls into the group of

"change in position as a result of pressure and weight" and also shows direct pressure on the superior pelvic outline.

CASE 4—Mrs. A K, aged 53, entered the Berwyn Hospital, complaining of pain in the left side of the abdomen for six years. At times, especially after meals, suffering was intense. It was a sense of heaviness and there were no urinary symptoms whatever.

The essential finding on examination was a large, rounded, firm mass filling the entire left side of the abdomen. It was not tender, and a sense of elasticity was noted. There seemed to be no direct connection with the pelvic organs. Blood and urine were normal.

Plain roentgenograms revealed the large, rounded mass of a tumor, superimposed on which the kidney shadow of normal outline could also be seen quite distinctly in spite of the patient's obesity.

Cystoscopy showed no drainage in forty-five minutes from the left kidney but perfect function on the right. A left pyelogram (fig. 5) revealed a normal sized, oval pelvis with

all calices completely obliterated. The kidney lay in about the center of the larger, rounded, less dense shadow of the cyst, which filled the entire left side of the abdomen. Injection of air showed that the bowel lay anterior to the mass. A tentative diagnosis of renal cyst was made, though the anuria on that side was puzzling. Operation revealed a large solitary serous cyst of the anterior surface of the kidney extending from the superior to the inferior pole practically bisecting the anterior half of the kidney (fig. 6). It measured about 18 cm. in diameter and had burrowed down to the pelvis but was not connected with it. It had dissected its way between the posterior

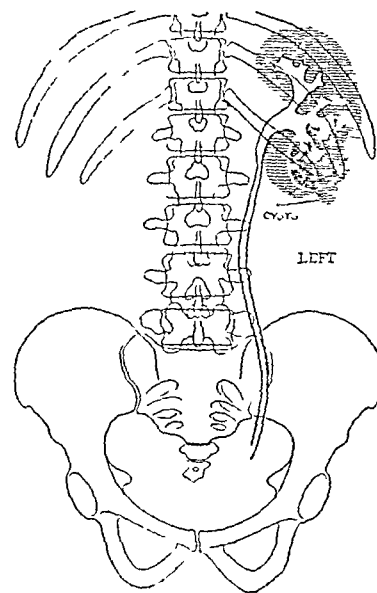


Fig. 10.—Multiple small cysts of lower pole overlying margins gave an erroneous impression of calcification thinning out of iodine in middle and lower calices (opaque medium here shown in white in contrast to black on other figures).

peritoneal wall and the ureter so that the latter was not displaced laterally. It contained clear, watery fluid. We resected the cyst flush with the kidney surface, cauterized its renal base with phenol and packed this bed. The kidney appeared normal in all other respects and we were reluctant to resect the cyst completely because it meant injuring the large vessels on the anterior renal pelvic wall and opening the pelvis proper as the cyst wall could not be shelled away. Such a formidable procedure might have necessitated a nephrectomy and we wished to observe the recuperative powers of that kidney.

Convalescence was uneventful, the patient leaving the hospital on the thirteenth day after operation. Cystoscopy three weeks later revealed perfect function in both kidneys. A pyelogram at this time (fig. 7) revealed some dilatation of the superior calyx with normal middle and lower calices. In spite of extensive packing about the kidney postoperative ptosis occurred, the pelvis being found opposite the third lumbar spine instead of the first as in the preoperative pictures. The cavity left following removal of the cyst was so large that suture fastening of the kidney in a more ideal anatomic position would have been preferable.

This cyst had obliterated all calices in the pyelogram and was unusual in the location and extent of involvement of the anterior renal surface.

CASE 5—Mrs. R M, aged 61, was admitted to the Presbyterian Hospital in the service of Dr. Abbott complaining of

pain in the left flank of twelve weeks' duration, associated with vomiting and fever. The onset had been sudden following an automobile trip. She had no other symptoms and no hematuria. Physical examination was negative except that the left kidney was more easily palpable than the right. A plain roentgenogram showed enlargement of the upper pole of the right kidney with a suggestion of calcification in this area. The pyelogram showed in absence of the upper calyx (fig. 8). A preoperative diagnosis of kidney tumor was made.

At operation we felt we were dealing with a tumor and removed the kidney. When it was opened a cyst was found containing free blood and material resembling organized clots (fig. 9). Sections revealed this material to consist of necrotic debris, lymphocytes and some fibroblasts. There was no evidence of neoplastic tissue. The wall was hard and leathery.

There is some question as to whether this might not be more appropriately classified with true solitary hemorrhagic cysts which Begg¹ of New Zealand states are in a different category from solitary serous renal cysts. Hemorrhagic cysts usually show pyelographic changes because some portion of the renal pelvis is almost certainly involved. In our case we feel that hemorrhage had taken place into a serous cyst.

The roentgenogram did reveal the tumor but because of its contents, its cystic nature was not suspected. The pyelogram falls into the group of obliterated calices. Early calcification of the cyst wall recalls Krukenberg's case.

CASE 6—C. F., a man aged 60 was admitted to the Presbyterian Hospital complaining of pain in the back of one week's duration. There had also been some difficulty in starting the urinary stream and hematuria had been noticed shortly before admission. There was moderate enlargement of the prostate, which was confirmed at cystoscopy and was probably the cause of hematuria and difficulty in urination.

Roentgenograms revealed a circumscribed area of increased density about 7 cm. in diameter, over the lower pole of the left kidney. The lower margin was so distinct as to suggest calcification. A pyelogram (fig. 10) revealed a partial filling—a thinning out of the iodide—of the middle and lower calices as if by extrinsic pressure. The upper ureter was displaced medially. A diagnosis of cyst of the kidney was made with probable calcification of the wall. The sudden onset of pain suggested the possibility of recent hemorrhage as in the previous case.

At operation four cysts were seen springing from the renal surface. One was attached to the lower pole two to the posterior surface of the kidney, at its middle and one to the convex border. Three of these cysts were as large as a small orange, and one was the size of a crabapple. The walls were thin and there was no calcification. They contained a yellowish clear serous fluid. None of them communicated with the pelvis of the kidney. The cysts were cut off flush with the renal surface, and their bases were cauterized with full strength phenol. They were not resected, because the kidney parenchyma looked normal and resection of four cysts would have been too destructive.

The pyelogram shows compression, but, unlike the blunting in other cases, the picture was one of thinning out or fragmentation. The outline of the cyst showed clearly and the margin suggesting calcification was apparently produced by overlapping of two cysts. The multiplicity of cysts does not alter the diagnosis of solitary serous renal cyst as the literature seems to include this type in the terminology designated

SUMMARY

1 Solitary serous renal cysts, though uncommon clinically, are not so rare but that they warrant consideration and elimination in all tumor masses of the abdomen. With increasing data available from the numerous cases being reported it is probable that a preoperative diagnosis will be made more frequently.

2 The roentgenogram may show (a) a normal pyelogram, (b) pyelectasis, (c) compression of the calices or the true pelvis, (d) change in position and axis of the kidney, (e) the outline of the shadow of the cyst itself, or (f) calcification of the cyst wall.

3 A most important and frequent roentgenographic finding is the outline of the shadow of the cyst itself, in close approximation to the solid renal shadow and with density in marked contrast to that organ. A careful search should always be made for this shadow. It is more likely to be overlooked on a plain film than with the pyelogram.

4 A cyst large enough to cause clinical symptoms is often associated with an abnormal pyelogram, which, though seldom absolutely typical of the cyst, nevertheless calls attention to pathologic changes in the kidney.

5 Resection of a wedge-shaped portion of renal tissue with the cyst is the treatment of choice. This method is less likely to be followed by secondary hemorrhage than the attempt at mere resection of the cyst wall. Rarely can the latter be shelled from its renal bed. The kidney should be fixed in place by sutures to prevent postoperative ptosis in the resulting cavity. Nephrectomy should be carried out only in cases of extreme renal damage or suspected associated cancer.

6 Six cases are reported, five of which were diagnosed correctly, before operation, the sixth a hemorrhagic cyst as a renal tumor, all by virtue of roentgen observations.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRs. LAU AND HENLINE, CAMPBELL, AND HERBST AND VANALEK

Dr. ROBERT E. CAMPBELL, Detroit. My own notion regarding the etiology of solitary serous renal cysts is that such cysts are perhaps acquired disease, not congenital. There is, however, probably an element akin to such congenital deformations as polycystic kidney disease in that there may be a group of cells located in that portion of the kidney in which such cysts develop (having been actuated by infection trauma or other unknown agents) that have the faculty of developing into these solitary cysts. The results of microscopic examination are indeterminate. The lining membrane usually being so much on stretch as to preclude certain knowledge as to whether this lining is of endothelial or epithelial origin. Our conception relative to polycystic disease being always bilateral has been borne out in a number of instances in which one kidney presented grossly only a single or possibly two large cysts. Microscopic examination of the kidney, however, revealed early degenerative changes typical of polycystic disease. I am in accord with the idea expressed recently by Braasch that the so-called hemorrhagic cysts are the same type as described by Drs. Herbst and Vanalek, the bleeding being a secondary factor. The authors' data relative to diagnosis and treatment are most valuable and are worth using in individual work. Concerning the interesting anomaly reported by Drs. Lau and Henline, the condition is well developed embryologically and we are once more cautioned to be on the lookout for such involved conditions, which may account for many difficulties in handling obscure urologic lesions. Drs. Lau and Henline adopted the obviously correct method of treatment in the case reported and were fortunate in having intravenous urography at their disposal as an aid to diagnosis. Relative to Dr. Campbell's method of preliminary conservative treatment and diagnosis I feel that chromocystoscopy by means of indigo carmine is of definite value at the time of cystoscopy serving to give data on differential function, which adds to the accuracy of later therapeutic procedures. I approve heartily of his method of actual treatment of the obstruction and I am sure that no one is better qualified as an authority than Dr. Campbell. I am sure, also, that many of these cases are never discovered and that there are many more which have been discovered and some of them successfully treated, which have not as yet been reported. I myself have seen fourteen cases with obstruction of this nature during the last ten years.

Dr. HERBERT T. HAYES, Houston, Texas. I was especially interested in the paper of Drs. Lau and Henline in their report

of three ureters on the right side. I think they should be complimented on the way they have worked up this case. In a case that came to my attention, there were three ureters on the left side. Two were complete and the third was about 1½ inches long. A pyelogram revealed that the large pelvis was the lowest in the kidney but that the ureteral orifice was the highest on the left ureteral ridge. The second ureteral orifice was slithlike and below the first. The second ureter had a small pelvis in the kidney that was above the larger and more normal pelvis. The third ureteral orifice was slithlike and below the second and closest to the vesicle orifice. This ureter was only about 1½ inches long and ended blindly. When the sodium iodide was injected into it there was considerable pain. This man had infection of only one ureter. The urine from the highest ureter was of amber color, was of high specific gravity, and was not infected. Urine from the second ureter was of low specific gravity, was infected, and there was a slight stricture of this ureter. This was dilated and the kidney pelvis lavaged several times.

DR CHARLES C. HIGGINS, Cleveland. Literature has led to the inference that solitary cysts of the kidney are of rare occurrence. Of 154 cases reported recently, at least, two thirds have been collected during the last five years, indicating that since the urologist has become acquainted with this type of pathologic kidney it is now being recognized more frequently. As a general rule, solitary cysts of the kidney do not produce symptoms unless they attain a size sufficient to exert pressure on the adjacent structures. Individuals may have a cyst of the kidney the size of a lemon and not be aware of its presence. At the Cleveland Clinic we have had nine cases of solitary cysts of the kidneys. Of the nine cases, seven have required surgical intervention. It is interesting that in only two cases were the cysts of such a size that pressure phenomena were notable. A roentgenogram may be normal even with a cyst of moderate size. In two cases of our series the plain roentgenogram showed a large cyst attached to the lower pole of the kidney, and a diagnosis of solitary cyst was made from roentgenologic study. Heminephrectomy is the treatment of choice for this condition and was performed in five of these patients. In two of them there was an associated colon pyonephrosis, and a nephrectomy was indicated. If the patient's condition does not warrant a heminephrectomy, a more conservative treatment can be instituted, namely, marsupializing the cyst wall to the incision similar to the treatment employed in caring for a pancreatic cyst. After the patient's condition is satisfactory, the cyst may be removed by performing a heminephrectomy, however, there is no doubt, as Drs. Herbst and Vynalek have emphasized, that heminephrectomy, if possible, is the treatment of choice for this condition.

PROF. EDMOND PAUL, Paris. The paper of Drs. Lau and Henline is extremely interesting and important. One must consider it as the first case of triple ureter observed in the living patient. I have made many studies of anomalies of the kidneys and ureters and after having thoroughly reviewed the literature I have concluded that up to the present time there has been no authentic case of triple ureter. The old cases are all poorly described, the majority are only trifurcations. Gould's case is false. It is interesting to have a well studied case of true triple ureter and gives rise to the question of the theoretical origin of anomalies. It is easy to understand why this malformation is exceedingly rare. Double ureter is due to premature bifurcation of the ureter into the two major calices. Triple ureter results from early defurcation of one of these ureters. It is therefore an anomaly of an anomaly or if you so wish an anomaly of second degree. All cases should be studied with great care and Drs. Lau and Henline must be thanked for their interesting and complete observations.

DR FREDERICK T. LAU, New York. I believe from the study of our case that it can be explained embryologically according to the splitting of the ureteral body. I think that the case seen by Dr. Hayes is exactly like ours but that the opaque medium did not go up so far. A pathologic point to which I sendraath called attention some years ago is interesting. That is, when one encounters a double ureter, the ureter draining the upper portion of the kidneys always empties into the bladder at a point below the entrance into the bladder of the ureter that drains the lower portion of the double kidney.

PHYSIOLOGIC MEANING OF COMMON CLINICAL SIGNS AND SYMPTOMS IN CARDIOVASCULAR DISEASE*

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Medical diagnosis is a science that involves more than the ability to recognize signs and symptoms and subsequently to group them into complexes or syndromes which in the light of past experience makes it possible to call a disease by name. Even a modest claim to proficiency requires a knowledge of the pathologic anatomy involved. But real genius in diagnosis is not achieved without the mental ability to portray also the functional disturbances concerned.

But all progress in eliciting obscure signs and new evidences of diseases and all discoveries in diversified fields of physiology have operated rather slowly in placing diagnosis on a physiologic basis. There are obvious reasons why the morphologic basis of disease antedated the functional conception. Morphologic pictures are concrete, they make a direct appeal to the senses. Physiologic processes are generally abstract, the mind can group them only through the employment of physical and chemical aids that transform physiologic forms of energy into types that can be interpreted by the senses. Many physiologic properties of living tissue—conduction or metabolism may be taken as examples—are as insusceptible of recognition by human sense organs as are radio, ultraviolet or x-ray vibrations. Nevertheless, by employment of the string galvanometer and cathode ray oscillograph, the mysteries of the conduction process have become comprehensible, and now it is virtually possible to see the excitation process spread over a heart or a nerve, to know where it begins and where it halts, how often and how fast it travels. The methods of direct and indirect calorimetry practically enable the physiologist to watch the vital fire of life burning within the cells, he can fathom the quantity and character of the substances burned as well as the rate of combustion under different circumstances. These instances suffice to recall that the unraveling of nature's intangible mysteries called functions usually requires the employment of complex physical apparatus or involved chemical procedures. To facilitate expression and intercommunication of facts discovered by such methods, new words, terms and phrases are necessarily introduced. Hence, it frequently follows that the mechanism and meaning of functional processes must at first be couched in language that is not universally understood. So it comes about that many a field of interesting scientific discovery remains in the cocoon stage because the abstract ideas involved cannot easily be translated into concepts that the mind easily grasps.

This extremely slow hatching process involved in the birth of new physiologic facts and the equally slow metamorphosis that their modes of expression must undergo are not the only factors that have retarded the functional interpretation of disease. Perhaps equally significant though more easily remedied, is the faulty impression that the functional reactions of disease differ intrinsically from those in health whereas in reality they differ only in degree. A great variety of physiologic processes are continually recurring in the

*Second Beaumont Lecture delivered in Pittsburgh N.Y. at the Philadelphia Hospital Annual Round Table Conference Aug. 23, 1930.

body as a result of chemical and nervous stimuli, but since the reactions are normally balanced, function continues on an even keel, and the mind remains unaware of them.

Physiologists frequently carry out laboratory experiments in which a single reaction or a group of reactions is intensified, depressed or inhibited through the employment of artificial chemical or nerve stimuli. Thus, on an anesthetized animal, one may stimulate an afferent nerve with an electric current and produce a reflex fall of blood pressure. A shop worker who accidentally crushes a finger duplicates the same experiment with the difference that, being conscious at the start, he faints.

Again, the student may perform a respiration experiment by partially occluding the trachea of an anesthetized animal in which case anoxemia and hypercapnia of the blood occur and stimulation of the respiratory center causes deep and rapid breathing. He may himself carry on a similar experiment by taking vigorous exercise. The respiratory reactions are identical with those of the laboratory animal; only the human mind becomes conscious of the dyspneic breathing. By filling the alveolar spaces with liquid and fibrin so that a rapid interchange of oxygen and carbon dioxide is prevented, nature produces the same respiration experiment, and the disease is called pneumonia.

In short, every form of disease may be looked on as an experiment that nature performs on animals or man. The so-called symptoms of disease are nothing more than intensified or depressed reactions which, if not actually in operation, are at least potentially available in the normal organism. No pathologic process in disease is capable of evolving new types of functional reactions. Neither is it capable of exciting or depressing functions that cannot be similarly affected by artificial or natural means in normal organisms. The methods employed by nature in experiments are often cleverly concealed and hence not always fully understood. It is the task of experimental physiology and of experimental medicine to discover the methods chosen by nature and to duplicate the physiologic reactions in experimental animals, where they can be more thoroughly investigated.

With such thoughts in mind, I propose to analyze a few common signs and symptoms of cardiovascular disease in the light of experimental studies, with a view of giving them a clearer meaning or an added significance.

TACHYCARDIA

An excessively rapid heart rate is a presenting symptom in such diversified conditions that it is important to determine at once whether a simple sinus tachycardia in which the origin and spread of impulses are normal is being dealt with or a form in which abnormal circuits or focal rhythmic impulses, as in auricular and ventricular paroxysmal tachycardias and in auricular flutter. Interesting differences occur also in the cardiodynamic mechanism, for while circulatory embarrassment rarely supervenes at heart rates of 250 per minute or over in sinus tachycardias, circulatory deficiency easily occurs at heart rates of 180 per minute or less in ventricular types of tachycardia.

Dynamic studies have shown that the faster the heart beats the more the period of diastolic filling is cut short and the more the systolic discharge is decreased. However, calculations show that this decrease is more than compensated by the cardiac rate up to 200 per minute,

so that the minute output becomes steadily greater. Only beyond this critical rate is the minute output reduced. The reason that the ventricles can fill at all at heart rates above 200 is that the heart muscle makes a remarkable adjustment. Calculations show that at a heart rate of 200 per minute the cycle length is only 0.3 second, or slightly more than the period of ejection at normal rates. Were it not for the fact that systole shortens progressively with increased rates, no interval for diastolic ventricular filling could exist.

Ventricular rates of 200 or less cannot maintain even a normal minute volume and result in circulatory embarrassment when an idioventricular rhythm is responsible for the tachycardia because of two factors. First, but less important, is the fact that ventricular filling is not aided by preceding synergic auricular contractions. Second, the abnormal spread of impulses over the ventricles produces a less efficient summation of fractionate contractions and consequently each systole develops less expulsive force.

Two dynamically different types of sinus tachycardia exist: (1) a form due to primary inhibition of the vagus or to stimulation of the accelerator nervous mechanism, e.g., that due to fear, to unstable conditions of the nervous system, to disorders of glands of internal secretion, to accelerated metabolism, to fever or to drugs; and (2) a compensatory form following a primary drop in blood pressure due to vasodilatation or reduced cardiac output. A clinical differentiation between these two physiologic types must be made by consideration of the entire clinical picture; it cannot be made from the degree of acceleration or from measurements of blood pressure alone.

Elementary dynamic considerations suggest that any increase in heart rate should theoretically produce an elevation of pressure. A significant rise of pressure is rarely found in human subjects, however; on the contrary, the blood pressure in the second type is often somewhat decreased.

This is due to the fact that the heart and peripheral vessels are reciprocally adapted to prevent more than moderate deviations from normal blood pressure levels. Whenever the heart rate increases and the blood pressure tends to rise reflexes are promptly set up from the larger arteries which invoke a vasodilatation. Conversely, when arterial pressures fall, due to primary vasodilatation or to diminished cardiac output, the heart accelerates and strives to restore arterial pressures to normal. Marek, who first noted this inverse relationship between heart rate and blood pressure, believed that it was due to a direct effect of the altered blood flow through the medulla. More recent work, however, has shown that nervous reflexes from the large vessels are chiefly concerned in producing such moderating effects on blood pressure. Two definite pathways are recognized, one over those afferent branches of the vagus which are distributed to the root of the aorta, the other over the so-called sinus nerve, a branch of the glossopharyngeal which is distributed solely to the enlargement of the common carotid artery as it divides into internal and external carotid branches. The second or compensatory type of cardiac acceleration is produced through these reflex mechanisms not only when peripheral vasodilatation exists but also when the systolic discharge of the heart is reduced. Shock and hemorrhage are two clinical conditions in which such a reduced output and compensatory acceleration obtain. But it is not so generally appreciated that the same reflex mechanisms operate when ventricular discharge

is reduced as a result of myocardial failure and that the tachycardia which is so characteristically present is nature's only method of maintaining an effective circulation. Aortic insufficiency presents another condition in which this compensatory type of acceleration obtains. Studies in my laboratory have shown that in this lesion it is doubly favorable, it not only augments the minute volume as in normal hearts but, by reducing the interval of diastole, decreases the reflux of blood into the ventricle.

A full appreciation of the physiologic significance of these forms of tachycardia is of the greatest importance. Without it, the physician is inclined to regard such a form of tachycardia as an unfavorable sign and is impelled to take steps to induce a slowing. It is obvious that this compensatory acceleration must not be disturbed. To do so would cause a drop in blood pressure sufficient, perhaps, to endanger life itself. Fortunately there is no medicinal agent by which a compensatory sinus tachycardia can easily be abolished, otherwise many a patient with serious heart disease would have been helped prematurely to his grave through kindly intentioned but misguided treatment.

PALPITATION

The normally contracting heart is a vigorously beating organ, as any one who has watched exposed hearts in animals will recall. With each contraction it not only develops sufficient tension to expel a considerable volume of blood, but it rotates and twists about in the chest and gives a sufficiently sharp thrust against the chest wall to permit its registration by graphic apparatus. But one normally remains quite oblivious of this rather vigorous impact, in fact, it is recognized only with difficulty when attention is specifically focused on the precordium. This is explained by the statement that one becomes accustomed to the impact, much as one becomes unaware of the tick of a clock. Expressed in physiologic terms, a partial fatigue of the receptive mechanism obtains, so that stimuli which originally excite become subminimal or below the threshold value.

In order to be recognized as palpitation, the accelerated heart action must therefore be accompanied by a more forceful thrust. This often—though not necessarily—implies a more vigorous beat of the ventricles. As a result of changes in rate, particularly when pronounced, the heart becomes smaller and shifts its position slightly, and in this wise the apex thrust can be delivered to better advantage. Or a similar phenomenon may result when the total force of contraction is actually reduced but the order of excitation is changed. Any abnormal distribution of impulses over the ventricles materially affects the motions of the heart as a whole and thereby the intensity of the apex thrust. I have often been impressed by the much more vigorous motions of the exposed ventricles of dogs when a ventricular tachycardia is induced experimentally. I believe I am correct in the statement that patients also complain far more frequently of palpitation when tachycardia is of ventricular origin. But dynamic studies show that the ventricular force is actually reduced, not increased.

VERTIGO, SYNCOPÉ, CONVULSIONS AND RELATED SYMPTOMS

Aside from primary disorders of the nervous system or chemical alterations of the blood, cardiovascular disorders are chiefly responsible for the symptoms of dizziness, unconsciousness or convulsions. Anoxemia of the cerebral centers resulting from a pronounced

fall of systemic blood pressures is the underlying cause. The cells of the cerebral cortex are extremely sensitive to a rather temporary but marked diminution of its supply of oxygenated blood and react promptly by manifestations of vertigo and unconsciousness. Experiments on dogs indicate that complete cessation of cerebral blood supply lasting more than eight minutes is only exceptionally followed by recovery. This is the reason that death follows so rapidly after ventricular fibrillation and that the revival of patients or animals after accidental electrocution presents such great difficulties.

Since the arterial blood supply is so intimately dependent on systemic pressures, any of the factors known to reduce arterial pressure, e.g., reduced systolic discharge, lowered peripheral resistance and decreased heart rate, can diminish cerebral blood flow beyond the critical level necessary to maintain cerebral functions. The syncope and convulsions that develop after severe hemorrhage and the fainting that occurs when a patient rises suddenly after convalescence are both due to a reduced venous return and a consequent reduction in systolic discharge. Extensive vasodilatation produced through nervous reflexes, as in fright or from administration of amyl nitrite, may lower systemic pressure sufficiently to produce tremors, convulsions or fainting. But sudden slowing or stoppage of the heart through psychic or reflex stimulation of the cardioinhibitory mechanism or through the development of complete auriculoventricular heart block are the most common causes of cerebral anoxemia. As a rule, unconsciousness and fainting are preceded by a period of dizziness and by ocular and auditory disturbances, the duration of which is inversely related to the degree of hypotension and to the rapidity of its development. During complete stoppage of the ventricles, the systemic pressure drops to zero within a few seconds and unconsciousness follows immediately. If the complete cerebral anoxemia is maintained beyond from fifteen to thirty seconds, recovery is always complicated by convulsions or epileptiform seizures. In short, the syndrome described by Stokes and Adams independently and often regarded as pathognomonic for heart block develops whenever the ventricles beat extremely slowly or stop entirely, regardless of the cause.

A physiologic analysis thus brings one to the realization that the symptoms of giddiness, syncope and convulsions are nature's method of announcing any considerable fall of arterial pressure, indeed, the reliability with which dangerous hypotension is thus registered cannot be equaled by the most careful application of blood pressure apparatus.

The unconsciousness and fainting that follow a lowering of systemic pressure are not only a warning signal they also set in operation an automatic mechanism for relief. Since unconsciousness goes hand in hand with a loss of voluntary muscular control, the patient in falling tends to assume a more horizontal position. The retarding effect of gravity on the return of blood being removed, the systolic discharge increases and, if the heart is beating at all usually elevates the arterial pressure above the critical level, thus consciousness is regained.

While symptoms of dizziness and fainting are commonly associated with disorders of the circulation that abruptly and rapidly diminish the cerebral blood flow they are rarely associated with the most serious valvular and myocardial conditions found in chronic heart dis-

case. The impairment of the cerebral blood flow and attendant anoxemia that ultimately develops lead to psychic phenomena of a different sort. A sense of mental haziness, impaired memory, stupor, drowsiness and hallucinations of sight, hearing and smell are among the more common symptoms noted. These forms of cerebral dysfunction are undoubtedly attributable to effects of moderate degrees of anoxemia. But that they are not newly developed manifestations is clearly demonstrated by the fact that all are acutely duplicated when normal individuals are submitted to the influence of high altitudes or low barometric pressures or are allowed to breathe low oxygen mixtures.

It has generally been supposed that nervous tissue has but a low metabolic role, that the brain consequently needs only little oxygen but needs that little badly. More recent experiments indicate, however, that the metabolism of the brain does not differ greatly from that of other tissue. The rate of lactic acid formation in brain tissue appears to be higher than that of the body as a whole, and the normal blood flow per gram of brain substance is larger than that of skeletal muscle, heart, spleen or liver, being exceeded only by that of the kidney, the suprarenal and the thyroid.

It is not surprising, therefore, that cerebral activity should be seriously affected in advanced stages of decompensation, it is rather surprising that cerebral manifestations are no more severe and that they do not precede decompensation. The absence of manifestations on the part of the most sensitive indicator of circulatory insufficiency—the cerebral cortex—is the best evidence a physiologist could cite in support of the conclusion that the circulation is physiologically at par until decompensation sets in.

FATIGUE

Fatigue after slight or moderate exertion or even at rest is a constant accompaniment of many forms of advanced heart disease. Its significance can be properly understood only through an analysis of a similar phenomenon occurring in health after strenuous exercise. The two are caused by the same underlying phenomenon, the only difference between the fatigue in health and that noted in patients with cardiac disease being the degree of exercise necessary to bring it on.

Although best usage restricts the term fatigue to a depression of physiologic function following activity, it is often loosely applied to general sensations that arise without relation to previous effort. The sensations of fatigue are known to every one, but it is not universally realized that they are but signs and symptoms of chemical changes that affect every tissue of the body. The glands, the sense organs and the central nervous system are just as susceptible to fatigue as the muscles. However, since the symptoms and disturbances of function are predominantly referred to the muscles, it is best to use the progressive decrease in the ability of muscles to contract as the criterion of what is going on in other cells of the body.

It has been demonstrated by different methods that the anaerobic production of lactic acid and its accumulation in muscular tissue is the ultimate cause of the progressive decrease in the strength of contraction. In intact animals, such an accumulation begins as soon as the demands of tissues for oxygen exceeds the ability of the circulatory and respiratory apparatus to deliver it. In the resting state of normal individuals the supply of oxygen always exceeds the demand and even

a considerable amount of muscular exertion may be undertaken before oxygen utilization equals the supply furnished through increased respiration and augmented circulation. When this occurs, a "steady state" is said to exist. In extreme exertion, on the other hand, the supply no longer meets the demand and an "oxygen debt" is incurred. Under such conditions, lactic acid accumulates chiefly in the muscles, but to a certain extent also in the blood. It is then that the signs and symptoms of fatigue develop. In short, decreased muscular efficiency and the sensations of fatigue are direct criteria of the existence of an oxygen debt and of the accumulation of lactic acid.

The more rapid development of fatigue in the presence of heart disease merely signifies a deficiency on the part of the cardiorespiratory system to meet the increased demands of the muscles during exercise. But since the respiratory apparatus functions in normal fashion except when secondary respiratory complications supervene, it is obvious that the heart and circulation are chiefly at fault. This circulatory deficiency does not, however, consist in an inability of the diseased heart to compensate, it is rather due to the fact that the heart's ability to augment minute output through acceleration or increased systolic discharge has already been called into action for the purpose of maintaining a normal circulation at rest. Hence, the physiologic ability to respond to exercise without the development of fatigue becomes a direct measure of the compensatory mechanism held in reserve by the heart, i. e., of its reserve power.

In a patient able to perform a moderate amount of work without fatigue the reserve power is good, a subject capable of only slight exertion has no great margin to call on, while the existence of continued fatigue even at rest denotes that all the compensatory mechanisms of the heart are unable to maintain an oxygen balance. The latter is the physiologic picture of cardiac decompensation. Clinical studies have shown that whenever this occurs the lactic acid content of the blood is increased even at rest, thus accounting for the perpetual existence of fatigue. Furthermore, it must be clear that the development of fixed acidosis in the bedridden patient is intimately linked with the phenomenon responsible for decompensation, as well as those that underlie muscular prostration.

DYSPNEA

Dyspnea is probably the symptom of greatest diagnostic and prognostic importance in heart disease. But it is also a phenomenon that occurs in normal individuals after strenuous exertion. The only distinguishing feature between the dyspnea of health and that associated with cardiac disease is the degree of exertion required to bring it on, indeed, in the most advanced cases of heart disease it is constantly present even during rest.

Consequently, one must return to the information gained by a study of dyspnea produced in normal animals or man in order to understand that which nature produces in disease. The rate and depth of the respiratory movements are adapted to the needs of the body through a center in the medulla. Normally, periodic volleys of impulses are sent down the cord and thence over the cervical and brachial nerves to muscles concerned with thoracic enlargement. But the intensity of the stimulation is not great enough to induce a maximum contraction in such inspiratory muscles as the external intercostals, the scaleni and the diaphragm.

Not is then strength sufficient to penetrate the more resistant pathways connecting with expiratory muscles. Hence expiration is a passive act. Now the normal intensity, sequence and duration of successive volleys of stimuli emitted by the respiratory center appears to be controlled by the intracellular C_{H^+} of this center. When the intracellular acidity increases for any reason the normal inspiratory muscles not only contract more frequently, more vigorously and for a longer time, but new groups of inspiratory muscles are likewise thrown into action. This gives rise to hyperpnea, i.e., an accentuated breathing in which the depth of inspiration is increased and the rate becomes more frequent. Finally, as the intracellular acidity of the respiratory nerve cells rises to still higher levels, the intensity of the stimuli sent forth arguments to such an extent that the pathways to expiratory muscles are also penetrated, and expiration becomes forced. I suspect that the unpleasant character of this type of breathing is partly associated with stimulation of unaccustomed proprioceptive endings as expiratory muscles are involved. I therefore prefer to limit the term dyspnea to that stage of deep breathing in which forced expiration supervenes. These considerations enable us to lay down a first postulate, viz., that dyspnea, whether recognized as a disagreeable symptom by a patient with heart disease or as a sign by the physician, presents physiologic evidence that the intracellular acidity of the respiratory center has increased considerably. Further, the corollary that the degree of dyspnea is roughly proportional to the increase in intracellular C_{H^+} .

The more difficult questions now arise as to how and why the intracellular acidity of the respiratory center is increased in cardiovascular disease. Experimental evidence indicates that this is determined (1) by the rate of acid formation, (2) by the rate of acid removal either through local oxidation or by mechanical export, (3) by the interchange of hydrogen ions between the blood and the respiratory cells and (4) by the buffering capacity of the cytoplasm comprising the respiratory center.

The first factor is probably concerned to the extent that the increased activity of the respiratory center results in an increased intracellular acidity and so assists in continuing dyspnea once it is inaugurated. But this can obviously not be at once a primary cause and in effect. Some other factor must be initially responsible.

The second factor must be carefully evaluated in the light of all clinical knowledge. Two mechanisms are conceivable: (1) owing to a sluggish circulation an inadequate supply of oxygen may reach the center and hence the acid formed within the center may fail to be properly oxidized; (2) owing to a diminished arterial pressure and an increased venous stasis, lactic acid may not be washed away easily.

The first process is a remote possibility and can be concerned only in advanced decompensation, for as already pointed out the oxygen supply appears to be adequate to support normal cerebral processes and ipso facto is likely to be sufficient for the respiratory center. The latter may be concerned somewhat earlier and may possibly be responsible for orthopnea as will presently be explained. But at the best such moduli operandi are difficult to picture except during comparatively advanced stages of circulatory failure. The advent of dyspnea particularly after light exertion occurs before any evidence of circulatory embarrassment can be

detected. It is present when arterial pressures, minute volume, blood flow and circulation time measurements are practically normal, and before venous pressures are elevated or stasis is evident. Indeed, diminished ability to partake of moderate exercise without the occurrence of marked dyspnea is a symptom in many forms of incipient heart disease.

A consideration of the third factor, the possibility that the acidity of the respiratory center may be altered by changes in the chemical composition of the blood, recalls the usual current conceptions, viz., that an excess of fixed acids or an increase of carbon dioxide are chiefly responsible for the phenomenon of cardiac dyspnea. But as to the relative importance of the two, the best clinical opinions appear to differ. And well they may in view of the fact that some cardiac patients show a diminished carbon dioxide content of the arterial blood while other equally dyspneic patients present no evidence of fixed acidosis.

But at this juncture distinctions must be made clear. There is no doubt that dyspnea easily induced by exercise is always associated with hypercapnia. The quandary arises chiefly in explaining the persistent dyspnea of resting cardiac patients who present distinct evidence of lactic acid accumulation but show only a normal or diminished carbon dioxide content of their arterial blood.

It is obvious that the interchange of hydrogen ions between the blood and the respiratory center involves both the p_{H^+} of the blood and the relative rates with which ions diffuse from the circulating blood into the respiratory cells. For a long time the view held sway that the acidity of the respiratory center is regulated solely by the hydrogen ion content of the blood and that somewhat similar effects might be expected from a definite change in blood C_{H^+} , whether due to an increase of fixed acids or carbon dioxide or to a decrease in bicarbonate. Such a parallelism between changes in blood C_{H^+} and respiratory activity could be expected, however, only if the metabolism of the center were low and all ions diffused with equal facility. The bulk of experimental work indicates that this conception is untenable and that there is no conspicuous relation between C_{H^+} changes of the blood and activity of the respiratory center; indeed, injections of sodium bicarbonate which decrease C_{H^+} of the blood may, under certain conditions (e.g., hemorrhage), act as a respiratory stimulant. On the other hand, elaborate experimental work has never succeeded in controverting the idea that the respiratory center responds promptly to small changes in the carbon dioxide content of arterial blood. This is undoubtedly due to the greater ease with which carbon dioxide or the bicarbonate ion diffuse into cells.

In view of these considerations it is highly improbable that the degree of fixed acid acidosis encountered even in uncompensated cardiac crises is capable of producing alterations in the C_{H^+} of the respiratory center sufficient to account for the dyspnea. In the first place the degree of acidosis is never equal to that encountered in diabetes and yet dyspnea is not a conspicuous feature in the latter disease. Furthermore, slow intravenous injections of lactic acid into experimental animals to a point just compatible with life never produce dyspnea provided a natural compensatory blowing off of carbon dioxide is allowed to take place. On the other hand, if the free discharge of carbon dioxide is interfered with, or if the rate of carbon dioxide production is

stimulated, violent dyspneic symptoms at once occur. Under such conditions even a normal carbon dioxide content of the blood is accompanied by pronounced dyspnea. This perhaps supplies a key to the interpretation of dyspnea in resting clinical patients. Neither an excess of carbon dioxide, as in exercise, nor the existence of a fixed acidosis is separately responsible for the dyspnea. But a moderate grade of fixed acidosis combined with pulmonary congestion which prevents the compensatory elimination of carbon dioxide might easily produce augmented breathing in heart disease. Such a conception makes it possible to link up the coexistence of pulmonary congestion, encroachment on alveolar air spaces, and a reduced vital capacity. It also explains why improvement of the circulation, greater ease in respiration and an increase in vital capacity go hand in hand.

In the light of this conception also it appears to be a basic fact that impairment of the pulmonary circulation is the ultimate cause that prevents the free compensatory elimination of carbon dioxide. Were it possible to analyze the detailed dynamic changes that occur as decompensation progresses, it would probably also be found that the grade of dyspnea is roughly related to the decreasing efficiency of the heart. Thus, through physiologic analysis the conclusion is reached that the degree of dyspnea experienced by a cardiac patient at rest offers the simplest and most accurate method of measuring the performance of the heart pump.

ORTHOPNEA

The fact that the dyspnea of advanced heart disease is materially aggravated in the recumbent position must have attracted the attention of ancient observers. Nevertheless, knowledge as to the physiologic causes of this curious phenomenon is still meager. It furnishes a glowing example of the retardation of medical progress when clinical conditions do not lend themselves readily to experimental study on animals. As is usual, numerous theories as to its etiology are not lacking and one can do no better at present than to consider how well each fits into the clinical picture and is consonant with physiologic facts.

One conception holds that the sitting posture acts mechanically to increase the reserve air in the lungs, i. e., the volume content with the chest wall in the normal expiratory position. By increasing the mean volume of gases in contact with lung capillaries this should favor a better interchange of oxygen and carbon dioxide. Such an increased pulmonary capacity is attributed chiefly to the lower position of the diaphragm. This theory is supported by the observation that negative intrathoracic pressures are less, and in a measure by the finding that the vital capacity is somewhat increased on assumption of a sitting position.

According to a second conception, which is really an extension of the former, the increased elastic stretch of the lung by descent of the diaphragm, combined with the mechanical advantage gained for the shoulder and abdominal muscles, facilitates the act of forced expiration. This view is supported by the belief that the difficulty in orthopnea affects the act of expiration rather than the act of inspiration.

A third theory stresses the fact that a more perfect unfolding of the lungs occurs in the upright position. Attention is directed to the fact that imperfect alveolar ventilation tends to occur even in normal individuals in a recumbent position and that a tendency to slight

anoxemia is rectified only by periodic deeper inspirations. To account for orthopnea on this hypothesis, however, it is necessary to assume that the inspiratory compensation is abrogated, an assumption for which there is no sound physiologic basis.

In contrast to those theories which attribute orthopnea to benefits from the mechanical mechanisms involved in the interchange of air, a fourth conception holds that improvement is due to a better minute flow of blood. This is supposedly accomplished by an enlargement of the aperture of the vena cava as the diaphragm assumes a lower position. Experimental work makes it exceedingly doubtful, however, that the latter mechanism materially improves the venous return. But this would appear to be immaterial in decompensation because the amount of blood available for filling is already in excess, owing to venous engorgement. Deficiency in venous return is not the cause of diminished ventricular discharge in cardiac failure, and it is quite incomprehensible how it could enhance the minute volume. This hypothesis may therefore be disregarded.

Finally, the view has recently been advanced that the sitting position benefits respiration because gravity favors a drawing of blood from the head and in so doing relieves venous congestion and improves the flow through the respiratory center. In this way, acid metabolites found within the respiratory center would more easily be washed away and the C_{H_2} of the respiratory center would decrease. Ernstene and Blumgart may be congratulated in offering an explanation of orthopnea which accords so well with recent physiologic evidence that the control of the respiratory mechanism is effected through changes in intracellular C_{H_2} . It is to be hoped that they may have added opportunities for adducing still more valid evidence in its support.

An understanding of the cause of orthopnea is more than an academic accomplishment, it involves more than the mental gratification which always follows a solution of nature's mysteries. The ultimate physiologic meaning of the phenomenon for the body as a whole is concerned in the solution of the riddle. If the sitting posture relieves dyspneic breathing through mechanical respiratory mechanisms, then the asphyxial distress in the recumbent position is necessarily associated with asphyxial changes in all tissues of the body. But if it is due to medullary stasis, it does not necessarily predicate a condition of generalized asphyxia. In other words, is the asphyxial distress experienced by orthopneic patients to be interpreted as evidence that a condition of general tissue asphyxia is already in progress or is it an advance warning of such an impending misfortune? Does a patient by assuming a sitting posture alleviate an existing asphyxial condition or does he thereby prevent its occurrence? These and similar far reaching questions are involved in a clearer physiologic understanding of orthopnea.

CYANOSIS

Cyanosis is one of the conspicuous clinical signs in a variety of cardiac disorders but is present in most pronounced form in mitral disease and in congenital defects of the heart. Its diagnostic significance is intimately bound up with the fact that the mucous membrane and skin over favorable parts of the body form a natural colorimeter by which the degree of oxygen saturation or unsaturation of capillary blood can be easily and directly evaluated.

The color of the skin is not a perfect colorimeter, however, since it is determined not only by the quantity

of reduced hemoglobin in the capillaries but is modified also (1) by the thickness and pigmentation of the layers overlying the smaller vessels and (2) by the number, diameter and length of the capillaries themselves. The effective blood pigment which transmits the bluish or purplish tinge to the surface of the skin is reduced hemoglobin. Lundsgaard has shown that when the hemoglobin content falls below 30 per cent cyanosis cannot develop, which explains its absence in valvular disease complicated by anemia. These factors must be carefully evaluated in employing the color of the skin as a criterion of oxygen unsaturation of capillary blood.

If we leave out of consideration changes in the character and total amount of hemoglobin—which is permissible for our purposes—an abnormal amount of reduced hemoglobin in the capillaries is due either to an abnormal oxygen unsaturation of the arterial blood or to an increased rate of oxygen abstraction by the tissues. There is no doubt that deficient saturation of arterial blood or a state of anoxic anoxemia is chiefly responsible for the cyanosis found in congenital cardiac defects and in advanced forms of myocardial and mitral disease. In these instances, nature but duplicates the reactions that normal individuals show when submitted to low oxygen tension. Many clinicians and experimenters whose opinions carry great weight believe that this is also the cause of cyanosis in earlier stages of compensated mitral disease. The conception is generally held that pulmonary congestion which begins with the very onset of mitral stenosis diminishes the interchange of oxygen to such a degree that arterial blood is not fully saturated. Careful analysis of blood drawn from the radial arteries of such patients indicates, however, that complete saturation obtains unless decompensation supervenes or pulmonary emphysema complicates the picture. It is therefore impossible to attribute the early cyanosis of mitral disease to anoxic anoxemia. In short, it should be constantly kept in mind that, while cyanosis gives unfailing evidence of unsaturated capillary blood and probably of anoxemia of the tissues, it does not necessarily indicate that arterial blood is unsaturated. Such knowledge is of practical importance, for the presence of cyanosis in compensated mitral disease does not imply that an existing pulmonary congestion has progressed to the extent that a satisfactory interchange of oxygen is interfered with.

Since the cyanosis in compensated mitral disease cannot be referred to anoxic anoxemia, other causes must be sought. It has been suggested that the decreased output of the heart leads to diminished flow through the tissues and that this may be a cause. There are two valid objections to such a conception. In the first place, reduced minute discharge of the heart in normal subjects, whether due to slowing or to reduced stroke volume, is marked by pallor, not by cyanosis. In the second place, gasometric determinations of minute volume and measurements of blood flow in the extremities fail to demonstrate any diminution. Until clearer evidence is submitted in its support the hypothesis that diminished cardiac output is responsible for cyanosis cannot be accepted.

Cyanosis may be produced in normal subjects by inducing a more rapid utilization of oxygen. Since the metabolic rate of the entire body is often increased in patients with cardiovascular disease the possibility must be considered that the greater demand of oxygen by tissues of the skin may cause greater oxygen depletion of capillary blood. But it is difficult to understand how cardiac involvement alone can produce alterations

in the metabolism of tissues in general, it is far more probable that the observed increase in basal metabolism is due entirely to increased muscular action associated with dyspnea.

Venous congestion when present is one of the important factors in intensifying the cyanosis of mitral disease. By retarding the capillary flow, blood remains longer in contact with the tissues and hence is more completely robbed of its oxygen. But this does not fully explain the earliest evidence of cyanosis recognizable long before venous pressures have risen or clinical evidence of venous congestion exists. Partly by a process of exclusion and partly because cyanosis develops primarily over commonly exposed portions of the body, it must be inferred that some peripheral vascular factor capable of slowing the capillary blood stream must be concerned. Neither the causes nor the physiologic mechanisms are understood, however.

It should be kept in mind that the state of tissue anoxemia, mirrored in the intense cyanotic color of the skin during cardiac decompensation, exists also in internal organs and eventually disturbs their functions to such a degree that so-called secondary symptoms are produced. Among these are anorexia, flatulence, nausea and vomiting, and jaundice. But among all the secondary phenomena for which decompensation is noted oliguria and edema stand out predominantly.

OLIGURIA AND EDEMA

An adequate discussion of these early and constant manifestations of cardiac failure cannot readily be compressed into a short space. Nevertheless an analysis of the physiologic manifestations of heart disease would be incomplete without such an attempt. As is well known, the urinary secretion in advanced stages of heart disease becomes greatly reduced in amount, is highly concentrated and dark, and frequently contains albumin. Functional kidney tests show decreased function of the kidneys, especially as regards their ability to excrete water and salts.

In order to understand the physiologic reasons for this it is necessary to recall that, according to modern theories of urinary secretion, the glomeruli filter out a dilute urine containing all the constituents of the blood plasma with the exception of the colloids. In passing through the tubules, water and certain useful substances are reabsorbed, while others no longer of value in the physiologic economy of the body are passed on and excreted. The rate of glomerular filtration is governed by (a) the effective glomerular pressure, i.e. the hydrostatic capillary pressure minus the osmotic pressure exerted by the blood colloids, (b) the number of glomeruli in operation and (c) the physical characteristics of the capsular membrane.

The first two factors are probably not concerned greatly in producing the oliguria of chronic heart disease. But since the kidney glomeruli are extremely sensitive to lack of oxygen their permeability is altered by an impaired renal circulation. The appearance of albumin in the urine is one of the first evidences of such a change. But this does not necessarily imply an increased permeability to crystalloids and water, on the contrary their excretion tends to be decreased. Such a condition is especially unfortunate as it leads to the retention of water, salts, acid radicals and nitrogenous waste products which favor the development of acidosis, uremia and edema.

With failure of the kidneys to eliminate water and salts in adequate amounts, it is but a step to assume that

this accounts for the edema, in other words, that it is essentially of renal origin. However, the cardiovascular edema does not admit of so simple an interpretation, the deficient urinary excretion is at most a secondary factor. The primary cause is associated with inadequate return of blood to the heart. But the exact mechanism through which stasis causes edema is still under discussion. Following the lead of Ludwig and later of Starling, physiologists quite generally believed that edema due to stasis is explainable by the physical processes of filtration and osmosis. While these physical processes undoubtedly contribute, the trend of recent investigations strongly suggests that Cohnheim was probably right when he suggested that altered permeability of capillaries due to anoxemia or malnutrition must occur. Briefly, the essential facts may be stated thus: As a first step, dilatation of peripheral capillaries occurs, this is followed by changes in permeability of such a nature that the passage of water and salts from the blood stream is facilitated but then reabsorption is impaired, in short, edema is a definite physiologic sign that circulatory failure has progressed to such a stage that the life processes of many body cells are beginning to suffer.

CARDIAC PAIN

An intelligent discussion of cardiac pain is not at present possible, for ideas as to the ultimate mechanisms producing pain remain wholly speculative, the anatomic pathways for pain impulses are not known with certainty, and physiologic facts with regard to the nervous mechanisms are extremely meager. Nevertheless, patient clinical observations and experiences derived from attempts at surgical relief, combined with more limited experimental data on animals, have furnished a working hypothesis in regard to the mechanisms of cardiac pain. The viscera are apparently not supplied with afferent fibers that ordinarily relay pain sensations directly to the cortex. Under certain conditions—not at all clearly understood—afferent impulses from the viscera may, however, form synaptic connections with the posterior root ganglion cells. In so doing they give rise to pain sensations that are not referred to the organs from which they arise but to somatic areas innervated by sensory fibers of the posterior root ganglion cells with which contacts are made. In addition, the constant bombardment of posterior root cells produces in them a state of hyperexcitability with the result that hypersensitivity and often reflex muscular rigidity develop in the somatic regions supplied by the spinal cord segments involved. If the stimulation of viscerosensory terminals becomes very severe, cells in contiguous spinal segments may be affected in which case the referred pain and hyperesthesia involve larger skin areas.

In this way it is possible to explain why referred pains resulting from stimulation of afferent cardiac nerves are sometimes distinctly limited to circumscribed regions below the sternum and over the pericardium and at other times spread over the whole left side of the chest, or even radiate down the left arm and up the neck as far as the mastoid region.

A careful study of the distribution of such pains and of the hypersensitive areas indicates that as a rule, spinal segments between the eighth cervical and the fifth dorsal are involved. Occasionally, however, involvement may extend upward as far as the second cervical and downward as far as the seventh dorsal segments. Since the inferior and middle sympathetic nerves to the

heart also reach the spinal cord between the eighth cervical and seventh dorsal regions, it was logical to assume that pain impressions from the heart travel over these roots rather than over the vagus and depressor nerves.

While this interpretation has received a measure of support from neurologic, physiologic and clinical studies, many facts seem to indicate that other pathways also may be concerned. Were this the only route, more consistently good results might be expected from surgical sympathectomy and enucleation of sympathetic ganglions. Cutler, reviewing the subject from a surgical as well as a physiologic standpoint, aptly remarks: "The failure of any procedure to alleviate pain in all cases leaves us with the definite impression that much more is to be learned."

But aside from this uncertainty there is also lack of information as to the distribution of sensory branches. Histologists have so far discovered no nerve terminals in the ventricular myocardium or its blood vessels that can safely be inferred to carry afferent impulse. Chiefly for this reason, Sir Clifford Allbutt maintained to the end of his life that cardiac angina could arise only from stimulation of the nerve fibers terminating in the outer coats of the aorta. But a great deal of clinical and even a little experimental evidence exists that anoxemia of the heart muscle—regardless of whether it is produced by coronary embolism, thrombosis or sclerosis or whether it is due to cardiac failure, overexertion and tachycardia—is capable of inaugurating serious attacks of cardiac pain.

Should it be assumed that as yet unrecognized sensory fibers are distributed with motor and vasomotor fibers along the course of blood vessels? Or is it necessary to revise the physiologic conceptions that supposedly efferent sympathetic fibers terminating in muscle cells or blood vessels may carry afferent impressions? Finally arises the question as to how anoxemia can produce stimulation. If through a rapid formation of lactic acid which is known to enhance irritability only temporarily and then to depress it, why does the pain persist, and why is it periodic rather than constant? Clearly, factors quite unknown appear to act as the physiologic irritants of intracardiac terminals, wherever situated.

Fundamental questions such as these must be solved hand in hand with clinical questions of a seemingly more practical nature before the meaning of cardiac pain can be elucidated. But the importance of a scientific method of approach should not be forgotten. New facts must be established for their intrinsic worth rather than with a view of supporting a favored theory.

Beaumont, whose patience and perseverance for the sake of science and humanity is being honored today, expressed this well in the preface to his book when he said: "They [i.e., my researches] are experiments made in the true spirit of inquiry, suggested by the very extraordinary case which gave me an opportunity of making them. I had no particular hypothesis to support, and I have therefore honestly recorded the result of each experiment exactly as it occurred. I submit a body of facts which cannot be invalidated. My opinions may be doubted, denied, or approved according as they conflict or agree with the opinions of each individual who may read them, but their worth will be best determined by the foundation on which they rest—the incontrovertible facts."

May we as seekers of scientific truths in medicine have the wisdom to reflect often upon these sentiments!

Clinical Notes, Suggestions and New Instruments

FATAL THYROID CRISIS FOLLOWING INJECTION OF A VARICOSE VEIN

EATLE I. CREENE, M.D. AND J. MAJOR GREENE, M.D.
CHICAGO

One of the most dreaded and serious complications of exophthalmic goiter or primary hyperthyroidism is the acute thyroid crisis. It is a well established fact that acute thyroidism usually occurs in patients in whom the disease has been present and may often be precipitated by apparently minor events. Acute thyroid crises have been known to follow fatigue, intercurrent infections and mental or physical stimulation and fatal crises have been known to occur following an automobile accident, an attack of influenza, an attack of tonsillitis, the opening of a peritonsillar abscess, or an operation for acute appendicitis.

Thyrotoxic patients are poor risks when any form of treatment not aimed at the elimination of the thyrotoxicosis is attempted. It is recognized that even the simplest procedures, unless absolutely necessary, should be postponed until the hyperthyroidism is controlled, for fear of precipitating an acute hyperthyroidism.

This is a report of a fatal case of thyroid crisis precipitated by the injection of a varicose vein. A review of the literature fails to reveal a similar case. Complications following the injection of varicose veins are so uncommon that the average practitioner is injecting various solutions with apparent impunity, not realizing that danger often lingers in the offing.

REPORT OF CASE

G. C., a man, aged 40, was referred to one of us with a diagnosis of hyperthyroidism. The history was that he had been well until eight months before he presented himself. He then became nervous, complained of tachycardia, loss of 20 pounds (9 kg.) exaggerated appetite, weakness, exophthalmos, increased sweating and tremor.

Examination showed the patient to be fairly well nourished. There was a moderate exophthalmos with positive von Graefe, Stellwag and Moebius signs. The lungs were normal. The heart was slightly enlarged to the left. There were no murmurs. The abdomen was normal. The pulse rate was 142. The blood pressure 160 systolic and 80 diastolic. There was a small ulcer in the region of the left ankle which had broken down two months before. A number of small veins were present, particularly at the upper margin of the ulcer. Urinalysis was negative. There were 4,800,000 red cells with 9,800 white cells. The differential count was normal. The Wassermann and Kahn tests were negative. The basal metabolism test was plus 66. He was advised to enter the hospital to be prepared for thyroidectomy.

Because of pain in the ulcer on the leg the patient asked to have the veins injected. He had previously had an ulcer which had been treated by injection and Unna's boot with complete relief. The ulcer had remained healed for approximately ten months only to break down again two months previously. We refused to inject his veins in the presence of a high grade thyrotoxicosis but advised him to enter the hospital. He was told that during his stay in the hospital (while being treated with compound solution of iodine) in Unna's boot would be applied. We felt confident that during this period in bed before and after his operation the ulcer would probably heal. It however there was failure to heal after this period we would then consider injecting the small vein in the region of the ulcer. The patient acquiesced and promised to enter the hospital the following day. Unfortunately this was not done.

Two days later one of us was called by the patient's wife who informed us that her husband was seriously ill. The patient was found desperately sick thrashing about in bed delirious vomiting almost constantly with diarrhea flushed hot skin and marked exophthalmos. The pulse was so rapid that it was difficult to count. The temperature was 104.2 F by axilla.

From his wife it was learned that on the evening after leaving our office he went to a neighboring physician and asked to have the veins injected. This was done. Within a few hours he complained of terrific pain at the site of injection. The physician was called and gave directions to apply hot wet dressings to the ankle. Several hours later the man became very restless, perspired profusely and began to vomit and to have a distressing diarrhea. Later the restlessness became extreme and was followed by delirium.

Examination of the site of injection revealed an inflamed reddened area at the upper border of the ulcer, undoubtedly an extravasation of the injected material.

As we were unable to give the patient iodine either by mouth or by rectum, a stomach tube was inserted and compound solution of iodine was given in this manner. Within ten hours, approximately 100 cc of the solution was given. Five hundred cubic centimeters of 1 per cent dextrose in physiologic solution of sodium chloride was given intravenously. Morphine in one-fourth grain (0.015 Gm.) doses was given to control the nervousness. The patient seemed to rally somewhat, but the following morning his condition was more critical. Sodium iodide was given intravenously (7½ grains or 0.5 Gm.), repeated twice. The patient was pricked in ice in an attempt to reduce the hyperpyrexia, which had now reached 105.4 F by axilla. In spite of all our measures the patient rapidly sank, going into a deep coma, and died.

SUMMARY

1. Thyroid crisis is one of the most serious complications of thyrotoxicosis.

2. All procedures unless absolutely necessary, should be avoided until the thyroidism is controlled.

3. A fatal case of crisis developed from an injection for varicose veins.

310 South Michigan Avenue

MERCURIC CHLORIDE POISONING WITH RECOVERY FOLLOWING THE USE OF SODIUM THIOSULPHATE

HOWARD E. MARCHBANKS, M.D. C. HERBERT SMITH, M.D. AND
HARRY L. CHURCH, M.D. PITTSBURGH, PA.

As one goes through the literature on mercuric chloride poisoning, one is struck with the comparatively few patients who have survived massive doses of the drug. For this reason we report this case because in some respects, which will be brought out, we believe it to be unique.

The literature is so vast that to attempt to review it would be beyond the scope of our intentions. However in preparing this report we have scanned the literature on the subject and find few, if any, cases reported in which the patient has taken as large an amount of the poison and retained it as long as our patient did and recovered.

Havman and Priestly¹ reported a case in which the blood urea nitrogen reached 247 mg. on the nineteenth day of treatment and on infusion of physiologic solution of sodium chloride the urea nitrogen was reduced to 83 mg. and eventually came to normal leaving no damage to the kidneys. Both kidneys had been decapsulated in this patient with apparently little result.

In 1920 Ravaut² described the influence of small injections of sodium thiosulphate on the course of a severe arsenical dermatitis. This report was followed in 1922 by that of McBride and Dennis³ in which a regular and sustained course of sodium thiosulphate was advocated for the emergency and follow up treatment of arsenical, mercurial and lead poisoning.

In 1928 Goldblatt⁴ reported the results of his experiments on the emesis interval in mercurial poisoning. He stated that in cases in which the patient had not vomited within thirteen minutes the prognosis was bad. In six fatal cases reported the shortest interval was 15 minutes and the longest was 120 minutes. None lived with an interval over 15 minutes.

¹ Havman, I. M. Jr. and Priestly, J. T. *Am. J. M. S.* 17: 510 (Oct.) 1924.

² Ravaut, P. *Pres. med.* 25: 73 (Jan. 28) 1920.

³ McBride, W. L. and Dennis, C. C. *Treatment of Arsenical Dermatitis and Certain Metallic Poisoning*. *Arch. Derm.* 63: 163 (Jan.) 1923.

⁴ Goldblatt, S. *Clinical J. Med.* 17: 245 1928.

Hunter,⁵ in 1927, reported a fatal case of poisoning with mercuric chloride in which at autopsy on the fourteenth day, he found there was practically complete regeneration of the tubular epithelium.

However, Harmon,⁶ in 1928, describes the pathologic changes of the kidney in four fatal cases of mercuric chloride poisoning in which intravenous injection of dosage over 5 mg per kilogram of body weight had been given. He found degeneration and necrosis in the tubular epithelium of all four cases. The most severe lesions were seen in the proximal and distal convoluted tubules. The glomeruli apparently escaped.

Weiss,⁷ in 1924, reported a series of 135 consecutive patients poisoned by some form of mercury with only 8 deaths. These patients took from 1½ to 50 grams (from 0.1 to 31 Gm) of mercuric chloride. In only fifteen patients did a complete suppression develop. Of these, seven died. The patients who had the greatest difficulty were of the group that took more than 30 grams (2 Gm) and those in whom the institution of treatment was delayed. The treatment used by Weiss was the intravenous injection of large doses of Fischer's solution namely, crystallized sodium carbonate, 10 Gm sodium chloride, 15 Gm, distilled water, sufficient to make 1,000 cc, along with other alkali mixtures by mouth.

Rosenbloom,⁸ in 1919, described a method of treatment that depended chiefly on the use of alkalinization for its benefits. Great credit is due these early workers for the progress they made.

Kahn,⁹ in 1915, reported a case in which a Greel had committed suicide by taking from 25 to 50 Gm of mercuric chloride. An autopsy was done, the observations of which he reports. He likewise gives the amount of mercury that was recovered from the vomitus, the stool washings and the urine. He also gives the amount of mercury found in every organ of the body, including even the skin and the hair. He found that the liver contained the greatest amount, 303 mg of mercury, the intestines next, 81.48 mg and the brain third, with 59.9 mg. After these were the kidneys, lungs, spleen and pancreas. The other organs contained only small amounts.

This covers only a small amount of the literature on the subject but brings up a few of the more important things about poisoning with mercuric chloride.

REPORT OF CASE

An American housewife, aged 21 was brought into Mount Carmel Hospital at 3 30 p. m., Feb 4, 1930, suffering with a severe pain in the abdomen and vomiting. She had eaten a little lunch at 2 p. m. on the previous day and at 5 o'clock, three hours after the lunch, she took ten 7½ grain (0.5 Gm) tablets of mercuric chloride with suicidal intent. She first took five tablets and drank a little water. She then took five more and drank

TABLE 1—Urine Examinations

	Specific Gravity	Albumin	Red Blood Cells	Granular Casts	Renal Cells	Waxy Casts
2/ 4/30	1.016	3+	0	3+	4+	0
2/ 5/30		4+	0	4+	4+	0
2/ 6/30		2+	2+	2+	4+	0
2/ 7/30		+	0	3+	4+	2+
2/21/30	1.010	0	0	+	2+	0
3/ 3/30	1.012	0	0	0	0	0

water again. She took about a glassful of water in all. About twenty minutes after she took the tablets she vomited. Ten minutes later she was in a physician's office, where she was given medicine to make her vomit. The physician also gave her milk. She then drank a lot of milk and coffee and ate one soft-boiled egg. Her bowels had moved once or twice before she came in. She did not notice that any blood was in the vomitus but she did notice blood in the stool.

Treatment was begun by one of us (C. H. S.) at once. She continued to vomit blood and mucus for several days. She was given sodium thiosulphate 10 cc intravenously every eight

hours until she had had five doses. She was given no other intravenous medication. Her diet was chiefly egg albumin in orange juice, milk and buttermilk. She vomited blood clots daily, and in fairly large amounts. She also passed from four to seven bloody or black stools daily. This continued until February 7, after which very little blood was seen in the stool and vomiting ceased. There was not at any time a complete suppression of urine although she passed only small amounts on the second and third hospital days.

TABLE 2—Results of Chemical Examinations of the Blood

	Nonprotein Nitrogen Mg	Creatinine Mg	Uric acid Mg
2/ 5/30	170	4.2	61
2/ 6/30	200	6.4	
2/ 10/30	270	7.8	80
2/12/30	300		
2/17/30	100		
2/18/30		1	97

On entrance the physical signs were not remarkable. The patient was fairly well frightened, but her temperature was 98 F, pulse 100, respiration 22. Her abdomen was not distended and except for the vomiting she seemed fairly well. Phenolsulphonphthalein 1-hourly 11 was 0 in two hours. The red blood cells became low as a result of the loss of blood.

The clinical course of the patient is better shown by the laboratory reports than in any other way. She seemed com-

TABLE 3—Red Cell Count

	Red Blood Cells	Hemoglobin
2/14/30	3,800,000	
2/18/30	3,140,000	40 per cent
2/21/30	1,800,000	20 per cent

fortable most of the time and took liquids freely most of the time including buttermilk, broth, egg albumin with orange juice, and pop.

On the fifth hospital day she complained of numbness, but by the next day she was feeling well again although her nonprotein nitrogen was 300 mg and her creatinine was 78 mg per hundred cubic centimeters of blood.

She constantly lost blood by the bowels. At no time was there a complete suppression of urine.

By the seventeenth hospital day, February 21, she had lost so much blood that a transfusion of 510 cc of blood was given by the direct method. A second transfusion of 525 cc was given March 1.

February 17 the nonprotein nitrogen had gone down to 50 mg and except for the constant bleeding she was in good condition. After the second transfusion the bleeding ceased. She left the hospital, March 3, in good condition.

She had made plans before leaving the hospital to visit in a distant city so that there would be no temptation for repeating her act.

July 28, she sent the following laboratory report, which we had suggested that she get. The urine was free from albumin, nonprotein nitrogen was 26 mg per hundred cubic centimeters of blood, creatinine, 18 mg per hundred cubic centimeters of blood, phenolsulphonphthalein, 50 per cent in one hour.

SUMMARY

1 A woman took 75 grains (5 Gm) of mercuric chloride.
2 She had retained the poison twenty minutes (not actual time, but by guess), before she vomited at all and thirty minutes before she had an emetic.

3 The nonprotein nitrogen reached 300 mg and the creatinine 78 mg on the seventh day after the poison was taken.

4 Fifty cubic centimeters of sodium thiosulphate in five doses seemed to have neutralized the mercury and saved the patient's life.

5 Six months after taking the poison the patient has normal kidney function and has no symptoms that are traceable to the mercury.

902 North Broadway

5 Hunter, W. C. *Ann. Int. Med.* 1: 463 (Jan.) 1928.
6 Harmon, L. J. *Am. J. Path.* 4: 321 (July) 1928.
7 Weiss, H. L. *Mercuric Chloride Poisoning*. *Arch. Int. Med.* 224 (Feb. 13) 1924.
8 Rosenbloom, T. *Studies in a Case of Acute Bichloride of Mercury*. *Ann. J. M. Sc.* 1: 7: 148-3 (March) 1919.
9 Kahn, M. *Rec.* 88: 357 1915.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, Secretary

MARINE LIVER EXTRACT-WHITE — A liver extract representing the water soluble fraction obtained from the livers of fish of the *Gadus* family in a glycerol-water solution. 100 cc represents fresh liver, 3,027 Gm (1 fluidounce represents 2 pounds avoirdupois).

Actions and Uses — Controlled clinical observations show that in pernicious anemia rapid improvement may be expected following the administration of marine liver extract-White. The first change following administration is a rise in the reticulocyte curve beginning from four to seven days after commencement of treatment following this the erythrocyte and hemoglobin curves rise and gradually approach the normal. Marine liver extract-White is an effective substitute for the feeding of whole liver.

Dosage — The average daily therapeutic dose is 90 cc (3 fluidounces). After the reticulocyte peak is reached, the therapeutic dose is gradually diminished and the maintenance dose established by a careful observation of the red blood cell count. The preparation may be administered cooled with cracked ice or in chilled orange juice. Rectally 45 cc (1½ fluidounces) may be administered twice daily in 60 cc (2 fluidounces) of warm milk.

Manufactured by White Laboratories, Inc., Gloucester, Mass. (Health Products Corporation, Newark, N. J. distributor). No U. S. patent or trademark.

The residue remaining after extraction of the oil from livers of fish of the *Gadus* family is extracted with water. The aqueous extraction is adjusted to the isoelectric point (pH 5 to 6), heated to 80°C and filtered. The filtrate is reduced under diminished pressure to a small volume and sufficient 95 per cent alcohol added to produce an alcoholic concentration of 60 to 70 per cent. The precipitate is removed by filtration and discarded and the filtrate reduced under diminished pressure at a temperature below 60°C until the residue has a specific gravity of 1.22 at 43°C. The residue is dissolved in glycerin and water added so that 100 cc shall represent 3,027 Gm of the fresh liver and contain 40 per cent of glycerin by weight.

Marine liver extract-White is a dark amber liquid slightly viscous and having a characteristic odor of liver.

Each lot of marine liver extract-White is tested for potency by clinical trials and none is issued unless found of satisfactory potency when administered in the recommended dosage.

POLLEN EXTRACTS-ARLCO (See New and Nonofficial Remedies, 1930, p. 29)

The following products have been accepted:

Grass Mixture No. 1 Pollen Extract Arlco (Timothy, June Grass, Orchard Grass, Red Top, in equal parts) Grass Mixture No. 2 Pollen Extract Arlco (Timothy 40 per cent, Orchard Grass, Red Top, and Sweet Fernal Grass, each 15 per cent) Grass Mixture No. 3 Pollen Extract Arlco (Bernuda Grass and Johnson Grass in equal parts) Ragweed Dwarf and Giant Mixture Pollen Extract Arlco (equal parts of each) Ragweed Mixture Plus Burdock and Marsh Elder Pollen Extra Arlco. Spiny Inuaranth Pollen Extract Arlco. Western Water Hemp Pollen Extract Arlco.

I prepared by the method given for pollen extracts Arlco (New and Nonofficial Remedies 1930, p. 29)

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS

W. A. PUCKNER, Secretary

PERTUSSIS VACCINES OMITTED FROM N N R

Pertussis bacillus vaccine was admitted to New and Nonofficial Remedies in 1914 on the basis of what appeared to be acceptable clinical evidence. In 1915 the following statement appeared in New and Nonofficial Remedies under the head of pertussis bacillus vaccine. The evidence indicates that it is of value both for prevention and treatment although eminent authorities state that the results have not been very satisfactory. In subsequent years when vaccine therapy was at its height pertussis bacillus vaccine was used extensively and yet critically controlled reports did not become available. In the light of this lack of confirmatory evidence the Council revised its statement to indicate a more skeptical attitude toward the product. Acceptable confirmatory reports still being lacking in 1928 the Council voted to omit pertussis vaccines with the close of

the longest period for which any one was accepted, unless in the meantime acceptable evidence for its usefulness in the prevention or treatment of whooping cough became available.

With the approach of the expiration of the stipulated period, the Council's referee in charge of the product reviewed the present evidence. Since in 1928 a clinical member of the Council had stated that he used pertussis vaccine in his practice, he was consulted in regard to his present estimate of the usefulness of the product. He reported that so far as he could learn from pediatricians and from consultation of the literature there is a general impression, difficult of absolute proof, that freshly prepared pertussis vaccines given during the period of incubation may be of value in modifying attacks and reducing the mortality of children and infants in whooping cough. As a preventive, he states that pertussis vaccines seem to have absolutely no influence and after the disease is thoroughly established even freshly prepared vaccines seem useless. He reports no evidence even for the presumptive value of stock or commercial vaccines.

In view of the fact that in fifteen years of extensive use no acceptable confirmatory evidence for the value of pertussis bacillus vaccines has become available, the Council voted to confirm its decision to omit from New and Nonofficial Remedies the accepted products, as follows: Whooping Cough Vaccine X Plim (Cook Laboratories, Inc.), Special Pertussis Vaccine (The Cutter Laboratory), Pertussis Bacillus Vaccine (The Gilliland Laboratories, Inc.), Pertussis Bacillus Vaccine (Hollister Stier Laboratories), Pertussis Glycerol-Vaccine Lederle Pertussis Vaccine for Prophylaxis (Lederle Laboratories, Inc.), Pertussis Vaccine for Treatment (Lederle Laboratories, Inc.), Pertussis Vaccine (Eli Lilly & Co.), Pertussis Bacterin Mulford Pertussis Vaccine (The National Drug Co.), Pertussis Vaccine (Parke, Davis & Co.) Pertussis Immunogen (Parke, Davis & Co.), Pertussis Vaccine, Immunizing (E. R. Squibb & Sons) Pertussis Vaccine, Curative (E. R. Squibb & Sons), Pertussis Bacterin-Swan Myers (Prophylactic).

THROMBOPLASTIN HYPODERMIC-SQUIBB OMITTED FROM N N R

Thromboplastin Hypodermic-Squibb (E. R. Squibb & Sons) is a sterilized extract of cattle brain in physiologic solution of sodium chloride intended for hypodermic injection to increase the coagulability of the blood. It was accepted by the Council for inclusion in New and Nonofficial Remedies as a brand of solution of brain extract (New and Nonofficial Remedies, 1930, p. 183). The Council first accepted thromboplastic substances in 1915. Since then little or no additional evidence has developed for the value of these preparations; their intravenous use almost certainly presents dangers and the Council has become convinced that there is no satisfactory evidence for their effectiveness when injected subcutaneously. In view of this the Council decided unless new evidence should appear not to include hereafter in New and Nonofficial Remedies any preparation of this type except for local application.

Since Thromboplastin Hypodermic Squibb is intended for hypodermic or subcutaneous injection E. R. Squibb & Sons were informed of the action of the Council and asked to submit evidence in support of the value of the hypodermic administration of thromboplastic substance. The firm replied that after a thorough search of the literature on Thromboplastin Squibb from 1923 to 1929 only two articles dealing directly with the preparation had been found; that there were many reports concerning the therapeutic action and uses of other tissue extracts of similar properties. The firm enclosed abstracts of two articles dealing with Thromboplastin Squibb and abstracts of thirty-two articles dealing with other similar tissue extracts. The submitted evidence did not permit a revision of the Council's conclusion that the hypodermic or subcutaneous administration of Thromboplastin Hypodermic Squibb or of other thromboplastic substances is not therapeutically valuable. As with other reports concerning the use of blood coagulants the submitted articles are inconclusive and unconvincing.

Because of the lack of evidence for the therapeutic value of subcutaneous or hypodermic administration of Thromboplastin Hypodermic Squibb or of other thromboplastic substance the Council voted to omit Thromboplastin Hypodermic Squibb at the expiration of the period for which it was accepted.

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SATURDAY FEBRUARY 21, 1931

THE INCREASING PREVALENCE OF PELLAGRA

Recent reports by the U S Public Health Service indicate that the prevalence of pellagra has been increasing for several years in this country The progress in the study of the disease, the newer insight into its probable etiology, and the vaunted prophylactic as well as curative measures applicable to the malady have awakened the hope that uncertainty is about to be replaced by confidence in its management Yet government records¹ recently submitted to Congress contained the ominous information that the pellagra death rate computed in 1924 as 2.5 in each hundred thousand of population rose steadily to 5.7 in 1928 and that in 1929 it was 5.5

Pellagra is not a new disease, though its prevalence in the United States was not appreciated until the present century In most countries it has been regarded as an essentially chronic malady confined almost entirely to the poorer classes in rural communities, but this has not been equally true in the United States, where it has been found to affect both the white and the Negro races Pellagra was described nearly two centuries ago, as early as 1735, under the designation of *mal de la rosa*, but the present appellation (*pelle agra*, rough skin) dates from Francesco Frapolli's description in 1771 A hospital was early established in Milan for the treatment of the disease, a three-volume treatise, *De Pellagra*, being published during the years 1786 to 1789²

Several theories regarding the cause of pellagra have been propounded The oldest—the zeist hypothesis—attributed the disorder to the use of spoiled corn, as it occurred conspicuously among maize-eating groups Subsequently pellagra was classed by many in the category of infectious diseases due to a specific micro-organism There was much in its incidence to suggest a microbiotic etiology, but the latter has been abandoned largely because of the pioneer investigations of Gold-

berger and his associates in the Public Health Service They have insisted on a dietary origin for pellagra placing it in the category of so-called deficiency diseases Pellagra does not occur in persons who regularly consume a well ordered mixed diet The sufferers are likely to have subsisted on a regimen in which the protein content was low and of poor biologic quality, with a paucity of fruits and green vegetables Goldberger believed that he had found an analogue of human pellagra in the so-called black tongue of dogs This, like pellagra, yields to corrective dietary measures

Recently, and again through Goldberger's leadership attention has been called to the effect of vitamin deficiencies in provoking the appearance of pellagroid symptoms The existence of a pellagra-preventing vitamin, designated successively as P-p, B, and G according to current usage, has been postulated This is part of the vitamin mixture formerly designated as water-soluble B It has become possible to separate products such as yeast, rich in the vitamin B "complex" into parts, of which one is conspicuously antineuritic and another protective against a form of dermatitis that arises, in experimental animals, in its absence Milk, meat and yeast are relatively rich in vitamin G, in which the cereal grains are poor On such considerations, prophylactic measures have been based

A somewhat different hypothesis has just been formulated by Bliss³ at the Tulane University of Louisiana School of Medicine, who ventures the suggestion that pellagra is in reality an iron-deficiency disease He points to anemia as a frequent concomitant of pellagra He also notes that the foods which are supposed to contain liberal quantities of vitamin G (beef, liver, egg yolk, yeast) are all iron-containing foods (some of them being among those containing more iron than any other known biologic product), while the pellagra-producing diet of poor farmers of the South (molasses and corn bread) is extremely poor in iron Bliss reports results of "a very encouraging nature" from iron therapy with pellagra patients In severe cases the iron was administered intravenously, and in milder cases it was given orally Animal experiments also were encouraging It would, of course, be extremely premature to endow these observations with the dignity of proof, but many clinical students of pellagra still believe that the last word regarding the nature of the disorder has not been spoken There are, indeed, reasons for assuming that pellagra as seen in man represents a syndrome—a group of symptoms including stomatologic, gastro-enteric, cutaneous and nervous manifestations, each of which may have independent pathogenic origin The hypothesis of multiple deficiencies with consequent protein disease characteristics is somewhat appealing It has again become "open season" in the hunt for explanations The most recent morbidity statistics encourage a vigorous pursuit

1 Press dispatches Dec 6 1930

2 Underwood Douglas Pellagra in Cecil's Textbook of Medicine Philadelphia W B Saunders Company 1927

3 Bliss Sidney Science 72 577 (Dec 5) 1930

THE PREMATURE CHILD

Recent years have witnessed an increasing consideration of the problem of the prematurely born child. The postpartum care has been greatly improved with respect to incubator facilities, the heating and ventilation of the environment, diet and nursing care. From the point of view of physical equipment and hygienic care, real progress is to be anticipated. There are, however, many records that promote discouragement in the contemplation of the effect of premature birth on the subsequent growth and development of the child. For example, in an elaborate review of the subject based on a study at the Children's Clinic of the University of Vienna, Capper¹ wrote in 1927:

The fate of immature children is not enviable: almost one half of them die during the first year of life. Of those that remain alive, the majority are physically as well as mentally underdeveloped. Some of them show a late mental development, others show a condition of psychic infantilism if the term may be used in its nonspecific sense, while still others show permanent and severe mental diseases. When they are passed in review, one is surprised at the variety and amount of abnormality encountered almost a regular "pathologic museum." In brief, the immature infant becomes the backward school child and is a potential psychopathic or neuropathic patient and even a potential candidate for the home for imbeciles and idiots.

Fortunately, this disheartening conclusion may be offset by the psychologic investigation recently completed in the Sarah Morris Hospital for Children, Chicago, by Mohr and Barthelme.² The care of their prematurely born patients had evidently been superior. The data regarding their physical development need not be reviewed here.³ A comparison of performances of fifty individual prematurely born children with those of their forty full term siblings, on the basis of the relation of mental age to chronological age in each case, revealed no significant difference in the mental development of the two groups, if due allowance was made for the period of prematurity. The prematurely born children did not differ from full term children in the time of the beginning of eruption of teeth, in onset of walking, in beginning of talking and in the learning of bladder control, if correction was made for the period of prematurity. The smaller prematurely born children were consistently a little later in these developments, but again the difference was minimized if this correction was made. Furthermore, in "personal-social behavior" the performance of the prematurely born children was consistently relatively superior. This may be attributable to the unusual care and attention offered prematurely born children or to their additional opportunities for social experience. In motor performances the children were relatively poor. Those who weighed relatively more at birth tended to do better on the tests for mental development. Of course it would be absurd to dis-

regard the hazard that premature birth presents. The Chicago records were by no means devoid of unfortunate cases. According to Mohr and Barthelme, hemorrhage and other injury at birth result in consequences to prematurely born children that do not differ from those clinically noted among the children born at full term. If they occur more frequently among the prematurely born, they constitute an extra hazard of prematurity. The important feature of this behavior research is its optimistic outlook. Its implication is that adequate opportunities must be provided for the care of those who are handicapped by premature birth.

BIOCHEMISTRY IN THE UNITED STATES

Physiologic chemistry—or biochemistry, as it has been commonly designated more recently—has long since come of age. The subject has become an important and integral part of the study of medicine and the practice of the art. The special technique of biochemistry has been introduced into clinical diagnosis to such an extent that it competes in prominence with physical procedures and with bacteriologic and immunologic methods of examination and research. A recent writer¹ has remarked that today it is quite safe to state that in the United States there is hardly a university worthy of the name that does not have on its staff one or more competent investigators in physiologic chemistry and a well equipped laboratory with resources adequate for at least some lines of research in this field. Added to these centers of research are the many special laboratories connected with the larger hospitals of the country where investigations of a chemiophysiology character are conducted, the many research institutions and foundations with their large endowments, where many biochemists of national reputation are to be found, and, lastly, the various government bureaus at Washington with their well equipped laboratories and trained workers who have contributed largely to the development of knowledge of a chemiophysiology nature in many directions.

Despite this current situation there was a time in this country, within the recollection of physicians still living, when an American student desirous of making progress in physiologic chemistry had no recourse other than going to Germany for the knowledge and experience he needed to help him on his way. He might be well trained in chemistry according to the standards of that date but he would be wholly lacking in the knowledge of methods, in the proper way of approach, for the study of physiologic problems. In an elucidating review of the development of physiologic chemistry in the United States Prof. Russell H. Chittenden, the dean of living American biochemists, points out that the first definitive laboratory of physiologic chemistry in America for the instruction of

1. Capper, Aaron. *The Fate and Development of the Immature and of the Premature Child*. Am. J. Dis. Child. 25: 44 (March) 1927.

2. Mohr, C. T., and Barthelme, Phyllis. *Mental and Physical Development of Children Prematurely Born*. Am. J. Dis. Child. 40: 1000 (Nov.) 1930.

3. They are given by Hess, J. H., Chamberlain, I. M., and Lundeen, E. C. *Premature Infant*. Pennsylvania M. J. 33: 429 (April) 1930.

1. Chittenden, R. H. *The Development of Physiological Chemistry in the United States*. New York: Chemical Catalog Company, 1930.

students was established in the Sheffield Scientific School at Yale University in 1874, under his charge.

Less than sixty years has brought a degree of progress far beyond the dreams of the most ardent enthusiasts of the latter part of the nineteenth century. Forty-three years ago (Dec. 30, 1887) occurred the organization of the American Physiological Society which took under its wing most of the professional biochemists of that period. The society now numbers more than 400 members and controls its own professional journal. In a few months the American Society of Biological Chemists, which also publishes a research journal, will celebrate its quarter-centennial. It was organized in 1906 to relieve the pressure in the parent society, with the purpose "to further the extension of biochemical knowledge and to facilitate personal intercourse between American investigators in biological chemistry." The entire development of this fundamental prerequisite of medical progress still partakes of the characteristics of youth with all its potencies for development. Little wonder that Cluttennden has concluded that "there would seem to be good ground for the belief that the future of physiological chemistry in this country is full of promise, and that what has been accomplished is but the forerunner of more nearly perfect knowledge."

Current Comment

LOSS OF PANCREATIC JUICE AND ACID-BASE BALANCE

The pancreatic juice is a digestive fluid of major importance. In connection with the succus entericus and the bile it exerts a powerful hydrolytic effect on fats, carbohydrates and proteins. In contrast to the gastric juice, the external secretion of the pancreas is definitely alkaline, containing about 0.5 per cent of sodium carbonate. When the ducts are cannulated and the secretion led to the outside, serious digestive difficulties result. However, the fatal consequences are probably due not to the removal of the digestive enzymes alone but, in no inconsiderable degree, to concomitant loss of inorganic ions from the body, notably fixed base. Recent studies on animals by Dragstedt¹ show that loss of pancreatic juice is accompanied by changes in the composition of the blood that indicate a condition of acidosis. For the first five days after the pancreatic fistula had been established, large volumes of Ringer's solution were given intravenously and the animal was in good condition. Weakness and depression promptly occurred on discontinuance of the injections, and death occurred in from four to six days. There was a decrease in plasma base, in chloride and in bicarbonate, and the concentration of hydrogen ions increased. At the same time the urea in the blood increased. These evidences of loss of base in the pancreatic juice under the conditions of the experiment

emphasize the usual reabsorption of base from the intestine and recall the importance of the internal circulation of compounds in the body. Former studies by Dragstedt and Ellis² on the fatal effect of complete loss of gastric juice and the remedial influence of sodium chloride solution show that the chloride secreted in gastric juice also is absorbed again into the blood. It is believed that iron is subject to a similar reabsorption, while after secretion by the liver the bile salts pass into the blood stream again with the fatty acids. Substances that play an important part in physiologic economy and that must be provided preformed in the food are not likely to be wasted by the body under ordinary conditions.

NEW YORK REGULATES BLOOD DONORS

The department of health of New York City has adopted codes and regulations governing blood donors. These regulations provide for the registration and supervision of blood donors according to definite rules. A "blood donor" means "any person who holds himself out as willing to dispose of his blood, or who offers his blood, or whose blood is used for transfusion purposes, for a fee." No person can act as a blood donor in the sense just indicated without a certificate of registration from the department of health. This certificate is good for one year only. The applicant for registration must furnish the report on an official form by a licensed physician, giving the results of a competent physical examination made not longer than seven days before the application is presented. No person may be registered who is below standard in weight, whose blood is not negative on the Wassermann or the Kahn test, who has a positive syphilitic history or who exhibits suspicious scars or symptoms of syphilis or who gives a history of malarial infection or who presents evidence of any disease of the heart, hyperthyroidism, asthma, status lymphaticus, tuberculosis, venereal disease or any communicable disease or evidence of drug addiction, whose blood group has not been determined, or who has been found to be a "dangerous universal donor." Every certified donor must keep a personal record book furnished him by the department of health, with personal description, photograph, signature, blood group, reports of physical and other examinations, and the transfusions in which he acts as donor. Not more than three weeks can elapse between his giving blood in transfusion and a new physical examination, the results of which are to be recorded in his blood donor's registration book. "No blood donor shall be accepted whose hemoglobin is found to be less than 85 per cent of the normal for the method employed." Again, no donor shall be used whose blood has not been found to be negative to standard tests for syphilis by the department of health within six months before a transfusion. By this test and by the repeated physical examinations, syphilitic infection since certification should be detected. Finally, immediately prior to transfusion, the physician in charge must examine the donor to determine whether he is in a normal state at that time. The regulations provide

¹ Dragstedt L. R. Montgomery M. I. Mathews W. B. and Ellis J. C. *Proc. Soc. Exper. Biol. & Med.* 28: 110 (Nov.) 1930.

² Dragstedt L. R. and Ellis J. C. *Am. J. Physiol.* 92: 407 (June) 1930.

also for full records and reports of transfusions by physicians and hospitals, which are transmitted to the department of health or, in the case of certain hospitals, are always accessible to its inspectors. While "no transfusion shall be made unless from a registered blood donor," it is provided that "in the case of an emergency a husband or wife, a parent or child or a relative or friend may be used as blood donor." The certificate of registration is revocable in case the donor contravenes any regulation or gives indications of syphilitic, tuberculous, malarial, typhoid or any other communicable infection or of having given too much blood. Agencies for blood donors may not be maintained without permit from the department of health and may not employ any other than certified donors. It is evident that the New York regulations have been worked out with great care under expert advice, both scientific and administrative. The regulations aim by careful and repeated examinations and tests to exclude unsuitable persons from acting as blood donors. Obviously this object cannot be attained fully without the willing cooperation of physicians and hospitals. This is said to be the first official regulation of blood donors, and they will serve as models for other efforts in the same direction. The number of persons offering to sell their blood appears to be increasing, especially of late on account of unemployment, and the best interest of the patient and the public requires more careful, more systematic supervision of blood donors than at present. The health department of New York is to be congratulated on having taken such an important step toward proper regulation.

Association News

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Hints

The American Medical Association broadcasts at 10 a m on Monday, 10 45 on Tuesday, 10 45 on Thursday and 10 o'clock on Saturday, over Station WBBM (770 kilocycles or 389 4 meters).

The program for the week is as follows:

February 23 We Need Pure Air
February 24 If Your Child Is Hurt
February 26 Home or Sanatorium for Care of the Tuberculous
February 28 Use Your Doctor As a Health Guide

Five minute health talks may be heard over the Columbia Broadcasting System daily except Sundays and Holidays from 12 to 12 05 p m.

The program for the week is as follows:

February 23 The Mechanics of Smell
February 24 What People Believe
February 25 Alchemy
February 26 Height and Weight
February 27 Man's Marvelous Machinery
February 28 The Caduceus

THE PHILADELPHIA SESSION

Special Exhibit on Varicose Veins in the Scientific Exhibit

The Committee on Scientific Exhibit of the Board of Trustees has decided to continue the special exhibit dealing with the treatment of varicose vein including the injection method. The following have been appointed as members of the committee: Geza de Zarkov MD, chairman, Chicago; Claude I. Dixon MD, Rochester, Minn.; and Howard M. Kern MD, Baltimore. In addition there has been appointed an advisory committee consisting of George E. Brown MD, Rochester,

Minn.; John Homans MD, Boston; George P. Muller MD, Philadelphia; Walter B. Sistrunk MD, Dallas, Texas; and H. H. Trout MD, Roanoke, Va.

The committee plans to present in the form of charts the indications and contraindications of injection treatment, the type of solutions used, the possible errors in technique, untoward symptoms during and after treatment, dangers, and end-results. The combination of injections with ligation of the saphenous vein and the radical excision of veins will receive consideration, especial emphasis will be given to the prevention and treatment of necrosis following injection treatment and on the conservative and surgical treatment of chronic ulcers of the leg.

In addition, arrangements will be made for the demonstrations on patients in small groups, as this part of the exhibit created so much interest last year. The tables shown in the exhibit will be compiled in pamphlet form and given out at the exhibit to visiting physicians.

CONTRIBUTIONS FOR MEDICAL SALON IN PERSHING HALL

The sum contributed this week for the Pershing memorial in Paris brings the total to \$1,884 60. A list of those who have contributed during the current week follows:

Col. Thomas J. Burrage Portland
Maine
T. J. Williams MD Eyrastown Ill
Louis M. Tomlinson MD Harvey
ville, Kan
H. B. Hawthorne MD West
Mineral Kan
H. D. Manley MD New York
F. A. Hannum MD Cleveland
F. A. Rupp MD Lewistown Pa
David Adiger MD New Orleans
P. J. Sarna MD Chicago
A. R. Ellison MD Buffalo
R. Roslin White MD Somers
Point N J
William Rosenberg MD Cleve-
land
C. H. Peete MD Warrenton
N C
William H. Gordon MD Detroit
Lee F. Hunt MD Anderson Ind
Walter M. Simpson MD Dayton
Ohio
O. E. Fink MD Danville Ill
Charles Wolf MD New York
Joseph A. Pessolano MD Albany
N Y
J. A. Link MD Springfield Ohio
I. T. vanBeuren Jr MD New
York
Fred H. Harrison MD Connell-
sville Pa
H. H. Hammel MD Tecumseh
Mich
L. J. Bragman MD Syracuse
N Y
J. Salem Rubin MD Los Angeles
Col. E. L. Ruffney Fort Riley
Kan
Charles E. Montague MD Wake-
field Mass
Anders Erick MD Chicago
Frank Billings MD Chicago
J. A. McDewitt MD Gulfport
Miss
Charence V. Clemmer MD Oak-
Spruce Philadelphia
Reginald R. Walker MD Wash-
ington D C
Walter T. Parker MD Owosso
Mich
P. Brooks Kelly MD Boston
Charles Newberger MD Chicago
W. Emmett Schriber MD New
York
Edgar A. Fisher MD Worcester
Mass
William Kelly MD Yencheng
South Shansi China
James W. Bunce MD North
Adams Mass
Medical Association of Northern
Berkshire North Adams Ma
M. C. Berghelm MD Haverly
Minn
Louis Harris MD Brooklyn
George F. de Schweinitz MD
Philadelphia
C. S. Wilson MD Belleville Ill
S. S. Rubinstein MD Baltimore
M. G. Minner MD Chicago
Doster Luckner MD Fort Wayne
Ind
Charles W. Olsen MD Chicago
Harry S. Berman MD Detroit
D. E. Ehrlich MD New York
M. H. Mathewsian MD Louis-
ville Ky
I. M. Heller MD New York
O. L. Friedman MD New York
Irving Swartz MD Camden
N J
E. Albert Aisenstadt MD Picher
Okla
LeRoy J. Wheeler MD Great
Bend Kan
Joseph H. Beattie MD Dobbs
Ferry N Y
Henricetta M. Johnson MD
Broken Bow Neb
J. E. Miller MD Steubenville
Ohio
J. B. McAllister MD Harris-
burg Pa
S. J. Armstrong MD Konaiah
N Y
E. G. Johnson MD Broken Bow
Neb
J. S. Akhurst MD Baltimore
I. H. Dillon MD Wellington
Kan
Samuel I. Shenthal MD Denver
S. A. Cosgrove MD Jersey City
Milton J. H. Grand MD New
York
M. M. Dansky MD Brooklyn
J. J. Doering MD Chicago
Harry H. Epstein MD Trenton
N J
Charles W. Perkins MD Nor-
walk Conn
A. K. Wilson MD Jacksonville
Fla
W. C. Langston MD Little Rock
Ark
George H. Garrett MD Del Rio
Texas
John M. Spraulding MD Los
Angeles
George Byron Hyde MD Wil-
mington Vt
Wylie L. Collins MD Nantucket
Mass
Melvin A. Wardwell MD Tench-
sept Maine
I. J. Pritham MD Greenville
Iowa
R. W. McKean MD Fort Worth
Texas
Arthur W. Walker MD River-
side Calif
C. N. Peeler MD Charlotte N C
Furgene P. Pendergrass MD Phila-
delphia
Albert S. Sherman MD New York
N Y
A. Russell Sherman MD New York
N Y
Mecca County (Mich.) Medical
Society
C. H. Douthett MD Clayton
N M
W. D. Hume MD Cincinnati
Lawrence F. Henderon MD
Watertown N Y
S. T. Forythe MD Cleveland
W. H. White MD Anding
Colombia
George W. Hogbin MD Colum-
bus Ohio
Marvin J. Seid MD San Fran-
cisco
Joseph Leidy MD Fishkill
Jacob J. Ahlf MD Camden N J
Henry K. Seelans MD Phila-
delphia
Camilla C. Artz MD S. J. J.
John (uncl)

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARIZONA

Bills Introduced—S 53 proposes to create a board of orthodontic examiners and to regulate the practice of orthodontia. H 122 proposes to authorize counties, or combinations thereof, to establish and maintain general hospitals. H 133 to amend that portion of the medical practice act which states to what persons the act shall not apply, proposes that 'nothing in this chapter shall inhibit service in an emergency, or the domestic administration of family remedies or the practice of religion or treatment by prayer nor shall it apply to any commissioned medical officer in the United States Army Navy or Public Health Service, in the discharge of his official duties nor to any licensed practitioner from another state when in actual consultation with a licensed practitioner of this state.'

ARKANSAS

Bill Introduced—S 135, if enacted, would apparently exempt chiropractors from the provisions of the basic science act and would make the board of chiropractic examiners the sole judge of the eligibility of all applicants for a license to practice chiropractic.

CALIFORNIA

Bills Introduced—S 409 proposes to raise to \$5 the annual fee which licensed dentists are required to pay the board of dental examiners. A 477 proposes to create a state medical library in the state library at Sacramento.

John P. Shepherd Fined for Illegal Practice—John P. Shepherd, Santa Rosa, is said to have pleaded guilty through his attorney, recently, to a charge of violating the medical practice act, and agreed that no further advertising would appear showing his name prefixed by the letters 'Dr.' or in any way indicate that he was conducting any form of practice. He is said to have paid a fine of \$100. Shepherd's name appeared in the city telephone directory with the prefix 'Dr.' and in the classified section under the heading 'Physicians and Surgeons'—M.D. Hillside Sanitarium. It was alleged further that he professed to treat tuberculosis. Shepherd is said to have applied for a license to practice in Indiana, June 4, 1897, stating in his affidavit that he had been engaged in the practice of medicine, surgery and obstetrics in Fountain, Mellott County, since December, 1896, and claiming that he had been a practitioner in the state for eleven years preceding the date of the affidavit. Records of the Indiana State Board of Medical Registration and Examination indicate that Shepherd was licensed under a clause in the medical law of 1897 which provided for licensure of all persons who had been engaged in the practice of medicine in Indiana for ten years prior to the passage of the act of 1897. No diploma or evidence of graduation was required of those furnishing a record of ten years practice. Shepherd seems to have claimed to have graduated from the University of Toronto Medical Faculty in 1886. When he was interviewed by a special agent of the California board in January, 1930 he is said to have claimed to be a graduate of Jefferson Medical College. The records of the American Medical Association fail to show that Shepherd is a graduate of either Toronto or Jefferson, or of any other reputable institution.

COLORADO

Bill Introduced—H 169 proposes to create a board of chiropractic examiners and to regulate the practice of chiropractic authorizing such practitioners to practice chiropractic as taught in chiropractic schools and colleges and to use the titles Doctor or Dr. in connection with their names when accompanied by the word Chiropractor or the letters D.C.

CONNECTICUT

Bills Introduced—S 31 proposes to amend the law with respect to the manner in which the board of examiners of midwives is selected by giving the governor the power to appoint the board. H 976 to amend the pharmacy practice act proposes to authorize the board of pharmacy to issue per-

mits to general dealers to sell proprietary medicinal compounds or preparations put up separately in sealed packages by licensed pharmacists. However, nothing herein contained shall authorize such permittees to sell any compound containing among other things, neonal, amyral, dial, or any preparation containing barbituric acid. S 215 to amend the law requiring physicians to report cases of certain industrial poisonings, seeks to provide that information obtained on investigation made as a result of the report shall not be admissible as evidence in any action at law or of the workmen's compensation act. S 333 proposes to exempt from the law requiring the licensing of all private hospitals any institution operated or maintained by any religious or fraternal organization having a board of managers or directors. H 156 would if enacted, permit licensed physicians to give contraceptive information and advice to patients.

Coordination of Medicine and Dentistry at Yale—Dr. Milton C. Winternitz, dean Yale University School of Medicine, discussed the school's plan to promote the integration of dentistry and medicine February 4, before the New Haven Dental Association. There are now four graduate dentists taking the regular course in medicine at Yale, and each year two such dentists are to be admitted, so that eventually there will be at all times eight dentists taking the course. B. G. Anderson, D.D.S., formerly associated with the University of Minnesota, Columbia University and Peiping Union Medical College as dental surgeon, has been appointed to head the clinical activities in dentistry at Yale. He will be in charge of the dental suite in which dental work for ambulatory and hospital patients unable to pay will be conducted. An investigation supported by the Rockefeller Foundation, is being made of the teeth and bacteria found at their roots in relation to both acute and chronic diseases. An endeavor is being made to discover why extraction of the teeth often alleviates diseases of the joints, heart, kidneys and eyes and to determine the significance of devitalized teeth of bacteria associated with them and of the destruction of the tissues forming the bed of the tooth. The plan it is hoped will create a liaison group which will draw physicians and dentists together to their mutual advantage.

DELAWARE

Bills Introduced—H 90 proposes to create a board of chiropractic examiners and to regulate the practice of chiropractic, defined as 'a drugless health system the basic principle of which teaches that disease is caused by interference with the transmission of nerve impulses. The diagnosis the location of misaligned or displaced vertebrae of the human spinal column, the procedure preparatory to and the adjustment by hand of such misaligned or displaced vertebrae of the spinal column and its articulations, by any method not including the use of drugs, surgery or obstetrics nor any branch of medicine, nor osteopathy for the purpose of relieving such interference.' S 43 to amend the law regulating graduate nurses proposes (1) to authorize the board of nurse examiners to formulate a curriculum and rules to be complied with by training schools and hospitals desiring to be accredited by said board, and (2) to require applicants for licenses to have had at least one year of high school work prior to their nursing education. After Jan. 1, 1934, all applicants must have four years of high school work.

GEORGIA

Dr. Copanaris Honored—Dr. P. Copanaris, director of hygiene of the Republic of Greece was tendered a banquet by the city of Savannah February 3. Dr. Copanaris has been visiting health departments in America as the guest of the International Health Division of the Rockefeller Foundation.

Midwives in Georgia—Four thousand midwives were practicing in Georgia at the beginning of this year, the state board of health reports. During the past year nurses of the state board of health gave instruction to 3,729 midwives. It is said that one third of the births in the state are attended by these women and that more than 20,000 babies born each year in Georgia are unattended by a physician.

No Fatality from Smallpox—According to the state department of health, the 1930 death rate showed a decrease of 1.6 per cent from the rate for 1929. Twenty one causes of death contributed most to the number of deaths reported eleven showing decreases from 1929 while ten showed increases. Among those showing decreases are accidents, diphtheria, influenza, malaria, nephritis, pellagra, scarlet fever and smallpox, and those showing increases cancer, cerebral hemorrhage, diabetes, diarrhea and enteritis under two years, dysentery and

heart disease. The greatest decrease was in smallpox, which, for the first time in many years, failed to show a death, and the greatest increase was in measles which showed a death rate 3097 per cent higher than in 1929.

ILLINOIS

Bills Introduced—H 192 proposes to provide that, in distributing funds of an estate, expenses attending last illness, including physician's bill, funeral expenses and necessary costs of administration, shall have priority over all other claims against the estate. S 68 proposes to authorize the governing board or council of cities, villages, counties and schools to employ public nurses. Such nurses must be licensed by the department of registration and education.

Chicago

Rare Publications—A copy of volume I of the *Medical Repository* which appeared in 1798 and which was the first American medical journal, is among the exhibits at the library of the University of Illinois College of Medicine in a display of early medical Americana. There is also a collection of the writings of Benjamin Rush, an autographed copy of a work by Marion Sims, and a copy of the first medical dictionary compiled by an American and Beaumont's book on digestion. Photographs of men famous in the medical history of the United States are also included.

Personal—Dr Henry Schmitz, professor of gynecology, Lovola School of Medicine received the gold medal of the Radiological Society of North America for 1930 for achievement in the science of radiology in its application to diseases of women.—Dr Harry C. Rohnick was appointed February 4, as consulting urologic surgeon for the Illinois State Industrial Commission.—The showing of three motion pictures with sound took place, February 11, at St. Luke's Hospital, the pictures are the work of Dr. Harold O. Jones, associate professor of obstetrics and gynecology, Northwestern University Medical School. The titles are "Suspension of the Uterus for Retrodisplacement", "Salpingectomy and High Femoral Amputation for Residues of Tubal Disease," and "Vaginal Hysterectomy for Uterine Prolapse."

INDIANA

Bill Introduced—H 342 proposes to make it unlawful to sell or supply any food drink, medicine or toilet preparation intended for human use or any antifreeze agent for motor vehicle radiators, containing wood alcohol, methanol or methyl alcohol. All sales must be made in containers labeled "deadly poison—wood alcohol."

Society News—Dr. Leroy W. Hubbard, Warm Springs, Gr., will address the Indianapolis Medical Society, February 24, on "Development of Warm Springs Foundation for the Treatment of Paralysis Due to Poliomyelitis."—Albert Stump, LL.D., Indianapolis, addressed the Tippecanoe County Medical Society, La Fayette, February 12, on "Special Legal Rights and Duties of Professional Men."—Dr. Louis E. Phaneuf, Boston, addressed the February 12 meeting of the Indianapolis Academy of Medicine and Surgery on "Transverse Cervical Cesarean Section."

IOWA

Bills Introduced—H 128 proposes to record liens to hospitals, physicians and nurses treating persons injured in accidents on any settlements or judgments obtained by the injured persons by reason of the accidents. H 149 proposes to require every professional licensee to keep his license publicly displayed in the place in which he practices. H 150 proposes to require pharmacists to inform purchasers of certain designated poisons of the character of the poison and to ascertain that the drugs are to be lawfully used. H 159 to amend the pharmacy act proposes (1) that those who manufacture drugs, poisons or medicines for sale at either wholesale or retail shall be deemed to be engaged in the practice of pharmacy, (2) to define a pharmacy as a drug store in which the prescriptions of licensed physicians, surgeons, dentists or veterinarians are compounded and sold by a registered pharmacist or where drugs, medicines or poisons are exposed or sold at retail, (3) to prohibit all persons from allowing any one who is not a licensed pharmacist to sell or dispense any drugs, poisons or medicines, unless it is done under the immediate personal supervision of a licensed pharmacist, and (4) to prohibit a registered pharmacist from allowing his certificate as a licensed phar-

macist to remain in or on display at any place of business unless he is legally employed there. H 174 and S 110 propose to amend the osteopathic practice act by authorizing osteopaths to prescribe or dispense internal curative medicines and by designating osteopaths as "physicians." H 129, to amend the law requiring the reporting of venereal diseases to local boards of health by physicians, proposes to require physicians to make such reports to the state department of health except when cases occur in the jurisdiction of full time municipal or county health officers, when such reports shall be sent to such officers. H 155 proposes to exempt tools, instruments and books of dentists from execution. H 224 proposes (1) to permit the state department of health to refuse to renew a license to practice medicine, on any of the grounds for which a license may be revoked by the district court, and (2) to permit a practitioner whose license has been revoked, either by action of the department of health in refusing to renew the license or by the district court, to have his license renewed by order of the state board of health on recommendation of the commissioner of health. H 223, to amend the medical practice act proposes that any person doing anything that under the statute constitutes the practice of medicine shall be deemed to be practicing medicine even though he is acting only as the representative of someone else. H 225 proposes to permit osteopaths to use the prefix "Doctor" if followed by the letters "D O" or "O S," and chiropractors to use the prefix "Doctor" if the letters "D C" follow the name. Even optometrists are allowed to use the title provided the letters "Opt" or "Optometrist" follow the name.

KANSAS

Bill Introduced—H 315 proposes to authorize the governing body of any city of the second or third class, owning and operating its own light and water plant, to furnish water, electric light and power to any hospital within the corporate limits of such city, free of charge, or at such reduced rates as the governing body may set.

MAINE

Bills Introduced—S 250 proposes to authorize the sterilization of certain socially inadequate inmates of state institutions. H 340 proposes to create a board of examiners of chiropodists and to regulate the practice of chiropody, defined as the treatment medically, mechanically, or surgically of the ailments of the human foot without the use of anesthetics other than local. H 408 proposes to create a state department of hospital aid, to consist of the commissioners of the department of public welfare ex officio, to provide medical and surgical treatments for persons whose resources are insufficient to pay for such treatments.

MASSACHUSETTS

Personal—Dr. George W. Gale who is 94 years old is planning to retire as a member of the Saugus Board of Health when his term expires in March after nearly thirty five years service.—Dr. Stephen Rushmore has been appointed a member of the board of registration in medicine to succeed Dr. Horace D. Arnold, resigned.—Dr. Frederick Carpenter Irving has been appointed professor of obstetrics at Harvard University Medical School, effective September 1.

Bills Introduced—H 83 proposes to direct the department of public health to formulate a plan for the care and treatment of persons suffering from rheumatism and allied chronic conditions. H 781 proposes to create a board of examination and registration for magnetic healers and to regulate the practice of magnetic healing. No educational requirements whatsoever are set forth in the bill nor is there any mention of what the examination will consist other than that it includes the subject of nerves. H 914 proposes to regulate the practice of chiropody therein defined to be the method, science or practice of locating and adjusting the subluxations of the articulations of the human spine and its adjacent tissues. No chiropactor shall unless registered as a physician or surgeon, practice obstetrics, or administer drugs or perform surgical operations by the use of instruments nor shall treat, unless under the directions of a physician, eruptive, erosive or temperative disturbances coming under the accepted definitions of contagious, infectious or reportable diseases. H 977 proposes (1) to require the consent of a patient before a physician may remove any organ of the body and after removal to require the physician to explain to the patient the necessity for such removal, (2) to extend to six years the statute of limitations on actions on contract or tort for malpractice, negligence, error

or mistake against physicians, (3) to provide that a physician shall not handle a patient in such a way as to cause pain without first explaining that pain will result from such handling and obtaining permission therefor from the patient. H 1069 proposes to provide a penalty for any person who shall be convicted of obtaining medical or surgical treatment from any dispensary on false representations as to his place of residence or as to his pecuniary circumstances.

MICHIGAN

Bill Introduced—H 88 proposes that, subject to the approval of the board of supervisors, a county health department shall have the power to employ such physicians and nurses, full or part time, as shall be necessary to carry out its work.

Professors Appointed—Dr Norman F Miller, professor of obstetrics and gynecology at the State University of Iowa School of Medicine, Iowa City, since 1926 has been named professor of obstetrics and gynecology and Bates professor of diseases of women and children at the University of Michigan Medical School Ann Arbor to succeed Dr Reuben Peterson, resigned. Dr Fred Jenner Hodges lecturer in radiology University of Wisconsin Medical School Madison was appointed professor of roentgenology to succeed the late Dr Preston M Hickey.

MINNESOTA

Bills Introduced—S 376 proposes to make it permissive for boards of education to establish physical and health education in the schools under their jurisdiction. Apparently, the present law makes the establishment of these courses mandatory. S 436 authorizes cities of the fourth class to establish and maintain city hospitals. H 406, if enacted would apparently, repeal the provision of the pharmacy act that allows any general dealer whose shop is more than 2 miles from a drug store to sell any commonly used medicine or poison which has been put up for such use by a registered pharmacist.

Medical Journal Celebrates Sixtieth Anniversary—The *Journal-Lancet* which represents the medical profession of Minnesota North Dakota, South Dakota and Montana, celebrates its sixtieth anniversary with the February 1 issue. The jubilee number contains, in addition to scientific papers articles on "The Future of Medicine in the Northwest," "The Development of Preventive Medicine in the Northwest," "Development and Progress of Pediatrics in the Northwest," "Early History of the Hennepin County Medical Society," and histories of the North and South Dakota state medical associations.

Violations of Basic Science Law—Averhino Fernandez, formerly of Monterey, Mexico, was sentenced to one year in the workhouse at St Paul, January 12, following his plea of guilty to a charge of practicing healing without a basic science certificate, according to the state board of medical examiners. Fernandez had been in St Paul about sixty days at the time of his arrest. He had had no medical experience but said he had worked in a drug store in Monterey. His practice was confined to Mexicans in St Paul.—John Hugh Lally operated an office at the St Paul Hotel, St Paul, during the month of November, 1930, and departed rather hastily from the state after the state board of medical examiners instituted an investigation of his activities. He was found guilty at Winnipeg, January 9 of treating persons contrary to the provisions of the Medical Act of Manitoba, Canada and fined \$100 and costs. The Minnesota board cooperated with the Manitoba authorities.

MISSOURI

Bill Introduced—H 302 proposes to provide that no form of vaccination or inoculation shall hereafter be made a condition precedent for the admission of any person to any public school college or university or for the exercise by any person of any right, the performance of any duty or the enjoyment of any privilege.

MONTANA

Bill Introduced—H 254 proposes to amend the workmen's compensation act by (1) providing that the term "physician" as used in the act shall include practitioners of chiropractic and (2) providing that where an injured employee is under a hospital contract and the hospital or medical facilities accorded are insufficient for the case the injured employee may at any time be placed where adequate hospital facilities are obtainable and the cost thereof shall be a legal charge against the one contracting to furnish hospital facilities.

NEBRASKA

Bills Introduced—H 220 proposes to regulate the practice of cosmetology. H 280 proposes that in counties having no regularly appointed physician or where it is necessary for the county board to employ other physicians to render public medical aid to the poor, such physicians so employed shall receive, as compensation, 50 per cent of the prevailing charge for similar services in such counties.

Society News—The Custer County Medical Society was addressed, Dec 11, 1930, by Drs Theodore H Koefoot, Broken Bow, on "Albuminuria" and Roy D Bryson Callaway, "Injection Treatment of Varicose Veins."—Drs Robert B Eldredge, Abram E Bennett and Willis H Taylor, Omaha, spoke on vaccines, serum treatment of infantile paralysis and modern obstetric procedures, respectively, before a recent meeting of the Cass County Medical Society, Weeping Water.—A symposium on anterior poliomyelitis was conducted before the Cedar, Dakota, Dixon, Thurston and Wayne Counties Medical Society, Wakefield, Nov 20, 1930 the speakers were Drs Allen C Sturtevant, Robert H McBride, Archibald F O'Donoghue and William D Rumon, all of Sioux City, Iowa.—Drs William P Wherry and Arthur D Dunn addressed the Omaha Douglas County Medical Society, January 27, on "Chronic Hyperplastic Mastitis Simulans and Its Relation to General Medicine." Dr Mame C Andersen spoke on "Ventricular Paroxysmal Tachycardia." Drs Rollin Russell Best, Omaha and Weaver A Rush, Beatrice, addressed the society, February 10 on "Operative and Nonoperative Treatment of Peptic Ulcers" and "Teeth Medically and Radiologically Considered" respectively.

NEW HAMPSHIRE

Bills Introduced—H 114 proposes to include cosmetics the list of substances covered by the state pure food and drug law. H 115 proposes to amend the pharmacy practice act (1) making it the duty of the state board of health to cooperate with the state board of pharmacy in analyzing samples of drugs sold in violation of the act, (2) making it unlawful for any person not a registered pharmacist or an assistant pharmacist in a drug store registered in accordance with the provisions of the act, to compound, dispense, or sell any potent drug and (3) permitting the general sale of proprietary medicines except proprietary medicines containing acetylsalicylic acid, barbitol and other compounds of the barbituric acid series, amiodopyrine, antipyrine, acetanilid, acetphenetidin, cinchophen. H 187 proposes that during the first thirty days after an injury to an employee an employer, coming within the terms of the workmen's compensation act, shall furnish the employee reasonable medical and hospital services. H 168 proposes to permit two or more neighboring towns to make appropriations for the joint support of the same physician, hospital, clinic or health center.

NEW JERSEY

Pharmacists Change Examination Dates—The Board of Pharmacy of the State of New Jersey announces that hereafter semi-annual examinations will be given in April and October for both the registered pharmacist and assistant pharmacist certificates in place of the examinations formerly conducted in January and July. The board will conduct examinations for registered pharmacists April 9 and October 15, and for assistant pharmacists, April 10 and October 16. Applications must be in the hands of the secretary at least thirty days before the date of the examination.

Health at Camden.—Telegraphic reports to the U S Department of Commerce from eighty-one cities with a total population of 36 million for the week ended January 31, indicate that the highest mortality rate (22.3) appeared for Camden and the rate for the group of cities as a whole was 15.2. The mortality rate for Camden for the corresponding period last year was 18.4, and for the group of cities, 13.7. The annual rate for eighty-one cities was 14.2 for the five weeks of 1931 as against a rate of 13.1 for the corresponding weeks of 1930. The rates published in this summary are based on mid-year population estimates derived from the 1930 census. Cities whose population was found to be less than was indicated by estimates heretofore used will therefore appear as having a higher death rate than usual even though there may have been no material increase in the actual number of deaths.

Bills Introduced—S 63 to amend the workmen's compensation act proposes to eliminate the statutory definition of hernia as ordinarily a disease and only rarely an accident and

as presumptively of either congenital or slow development in the absence of a tear or puncture of the abdominal wall. Proof of the industrial origin of a hernia may be by preponderance of evidence and need not as at present be conclusive proof. Time for the manifestation of symptoms after the event alleged to have caused the injury, within which industrial origin is to be presumed, is extended. Detailed provisions of the present law defining the relative responsibilities of employer and employee for the treatment of an industrial hernia will be eliminated if this bill be passed. A 105 proposes to permit any two or more associations or corporations maintaining a hospital, infirmary, dispensary or clinic in the same or adjoining counties, and supported in whole or in part by private charity, to merge or consolidate into a single corporation.

NEW YORK

The End of New York Health Demonstrations—Eight years after its inauguration, the New York health demonstrations project of the Milbank Memorial Fund terminated Dec 31, 1930. In both Cattaraugus County and Syracuse, local agencies have assumed the maintenance of the health activities growing out of the demonstrations, and the future cooperation of the fund in these localities will be confined to the support of research or other experimental projects growing out of the local demonstration experiences. The metropolitan demonstration will continue as an individual project. The board of supervisors of Cattaraugus County recently voted to increase the budget for the Cattaraugus County Board of Health. The decrease in deaths among infants is one notable result of the program and is indicated in a resolution as one of the reasons for the board's continued support of the activity.

Bills Introduced—S 385 proposes that a certificate of birth, in addition to the information now required, shall contain the mother's finger prints and foot prints of the child. A 143 proposes to prohibit experiments on living dogs. A 492, to amend the workmen's compensation act, proposes to allow injured employees to select their own physicians. A 573 makes it unlawful for any person to possess any apparatus designed for the use of opium. S 648 proposes to amend the law in relation to vaccination so as to provide that whenever smallpox exists in any school district the school authorities shall exclude from school for a period of fourteen days every child or person who does not furnish a certificate from a duly licensed physician of successful vaccination or show evidence by scar of a successful previous vaccination. If new cases of smallpox continue to develop after the expiration of fourteen days, the school authorities may renew such order for another period of fourteen days. No minor child shall be compulsorily vaccinated without the consent of its parent or guardian and no child shall be excluded from any public school in the absence of smallpox in the school district. A 574 proposes to make it unlawful to obtain habit-forming drugs from one physician while receiving treatment from another without disclosing that fact. A 584 to amend the workmen's compensation act, proposes to make all occupational diseases, arising out of an employment, compensable.

New York City

Personal—Dr Francis W. White has been appointed surgeon director to the throat department of the Manhattan Eye, Ear and Throat Hospital and Dr Edmund Prince Fowler, surgeon director to the ear department.—Dr Karl Landsteiner of the Rockefeller Institute for Medical Research was recently elected an honorary member of the Royal Swedish Academy of Science.—Dr Angenette Parry was recently decorated by the Greek government in recognition of service rendered sick and destitute refugees at the American Women's Hospitals, Kalamita, Piraeus, Greece.—Dr William W. Peter, New York, will go to China in February to help organize a health program for the Nationalist government. He is expected to spend about eight months in this work. Dr Peter was one of the founders of the China Council on Health Education of which he served as director from 1911 to 1926.

NORTH CAROLINA

Bill Introduced—S 117 to amend the laws relating to professional nursing proposes (1) that the examining board be designated the North Carolina Board of Nurse Examiners, (2) that all applicants have a high school education, (3) apparently that all persons who practice nursing come within the provisions of this act except the nursing of the sick by friends or members of the family.

NORTH DAKOTA

Bill Introduced—S 109 proposes to designate as illegal conduct, and as such sufficient cause for the revocation of a license to practice dentistry, certain forms of advertising of a character tending to deceive or mislead the public.

Society News—Dr Julius O. Arnson, Bismarck, and Attorney Fred T. Cuthbert, Devils Lake, addressed the Devils Lake District Medical Society January 28, on "Clinical Recognition of the Cardiac Irregularities with Remarks on Management of Congestive Heart Failure" and "Legal Medicine," respectively.

Twelve Deaths from Food Poisoning—Botulism poisoning from pea salad served at a party at the farm home of Edward Heim, Grafton, January 29, is believed to be the cause of twelve deaths reported up to February 2. Eight persons who also attended the gathering had shown no symptoms at the time of this report. The toxic material affected all the victims in practically the same manner and with one exception all were conscious until death and suffered no extreme pain. All complained of dizziness and impaired vision as the first symptoms, followed by failing sight and congested lungs. The midnight lunch consisted of "buns and wieners, olives, apples, two kinds of cake, and a pea salad, which included home canned peas, sliced cheese and some mayonnaise dressing placed on a lettuce leaf." Five of the eight members of the Heim family were among the victims. The three surviving children ate none of the salad, one of the other four survivors ate a small amount, apparently with no ill effect, and the other three ate generous portions but became sick a short time afterward and vomited.

OHIO

Bill Introduced—H 140 proposes to provide that the state reimburse hospitals for care and treatment of indigent hurt in automobile accidents.

State Health Officer Appointed—Governor White appointed Dr Harry G. Southard, Marysville, state health commissioner of Ohio, January 23, to succeed Dr Charles A. Neal. Dr Southard has been health commissioner of Union County and Marysville since 1924, it is reported.

Dr Heuer Goes to New York—Dr George J. Heuer, surgical director of the Cincinnati General Hospital and Holmes professor of surgery in the University of Cincinnati College of Medicine, has been appointed surgeon-in-chief of the New York Hospital and professor of surgery in Cornell University, effective July 1. He will undertake the organization of the surgical department in the new plant of the New York Hospital-Cornell Medical College Association.

Another Unit in Medical Center Opened—The Lakeside Hospital, one of the University Hospitals of Cleveland, Western Reserve University School of Medicine was recently opened. The eight story building is white brick corresponding with the Institute of Pathology of the university, and has a capacity of 378 beds. The Leonard P. Hanna House, a private pavilion, extending at right angles from one end of Lakeside Hospital, was opened at the same time. With the opening of this unit the building program of the University Hospitals, announced four years ago (THE JOURNAL March 26, 1927, p 1012), is practically complete. The nurses' dormitory was opened in October, 1930, and the central service building in December.

OREGON

Bills Introduced—S J Res 12 proposes to create a narcotic hospital commission to consider the establishment of a narcotic hospital. S 54 proposes to regulate the sale of veronal, barbitol, chloral hydrate, adalin, luminal and all acid diethyl barbituric preparations. S 53 proposes a new act to regulate the sale, possession or use of narcotic drugs and marijuana. S 163 proposes to abolish the state board of barber examiners and to vest all its powers and duties in a state barber examiner. H 202 proposes to accord liens to hospitals, physicians and nurses treating persons injured in accidents on settlements of judgments obtained by the injured persons by reason of such accidents. Such liens, however, shall not attach to settlements or recoveries had by reason of the workmen's compensation act.

PENNSYLVANIA

Bills Introduced—S 134 proposes to establish a state cancer institute and clinic. S 129 proposes to create a board of naturopathic examiners and to regulate the practice of naturopathy. All applicants for a license to practice naturopathy, however, prior to appearing before the naturopathic

board for examination would be required to pass an examination given by the state board of medical education and licensure, in anatomy, physiology, pathology, bacteriology, hygiene, biochemistry, symptomatology and diagnosis. H 331 proposes to regulate the practice of barbering. H 360 proposes that, in court hearings to determine the right of one committed to any mental hospital to a discharge therefrom, the court may in its discretion admit in evidence the sworn statement of hospital physicians.

SOUTH DAKOTA

Society News—At a meeting of the Aberdeen District Medical Society, Aberdeen, January 20, addresses were made by Drs. James B. Carey, Minneapolis, on Classification and Management of the Anemias; Edward P. Cathcart, Rochester, Minn., 'Value of Urography in General Diagnosis'; and Geoffrey I. W. Cottam, St. Paul, 'Intestinal Obstruction'.

Bills Introduced—S 64 and H 99 propose to provide for the collection, recording and preservation of vital statistics under the supervision of the state board of health. S 96 proposes to regulate the practice of chiropody, defined as the local medical, mechanical or minor surgical treatment of the human foot and massage in connection therewith excluding, however, the amputation of a toe or toes, the removal of any bone, or the use of anesthetics other than local.

TEXAS

Bills Introduced—S 78 proposes to define "poison" within the meaning of the pharmacy practice act to mean any drug, chemical or preparation which according to the United States Pharmacopeia National Formulary or materia medica is liable to be destructive to human life in quantities of sixty grains or less. H 334, to amend the nursing practice act, proposes that the board of nurse examiners consist of six members, two of whom serve for six years, two for four years and two for two years. H 251 proposes to levy an annual occupational tax of \$50 on itinerant physicians.

Annual Clinical Conference at Dallas—The third annual spring clinical conference of the Dallas Southern Clinical Society will be held, March 30-April 3 in Dallas with headquarters at the Baker Hotel. The lectures included in the graduate courses are grouped in fourteen divisions representing the major specialties in medicine. Beginning at 2 p. m. daily from Monday through Thursday, a group of organized clinics will be held in each of six Dallas hospitals. The annual clinic dinner and alumni gathering will be held Wednesday evening. A symposium on "Foreign Bodies of the Food and Air Passages" will be held Tuesday, and on Thursday one on hypertension. The round table luncheons will be held in four groups: surgery, pediatrics, medicine and eye, ear, nose and throat. A program of motion pictures, some with sound, has been prepared. Scientific exhibits will depict among other subjects, tularemia, undulant fever, Rocky Mountain spotted fever, psittacosis, endemic typhus fever and rabies. Technical exhibits are also planned. Drs. John R. Caulk, St. Louis, James H. Means, Boston, Willis C. Campbell, Memphis, Tenn., Conrad Berens, Jr., New York, and John Osborn Polak, Brooklyn, are included in the list of guests, some of whom were noted in THE JOURNAL, January 24, p. 279.

UTAH

Bill Introduced—H 56 proposes, in effect, to create a board of naturopathic examiners.

VERMONT

Bills Introduced—H 116 proposes to regulate the practice of naturopathy, which is defined as a system of treatment for the human body by the use of psychological, mechanical and material health sciences to aid in purifying, cleansing and normalizing human tissues for the preservation or restoration of health according to the fundamental principles of anatomy, physiology and applied psychology, as may be required without medicine or surgery. H 155 to amend the optometry practice act, proposes (1) to repeal that section forbidding the practice of optometry from door to door or from town to town; (2) to define gross unethical or unprofessional conduct which is sufficient cause for the revocation of a license to mean (1) advertising which has tendency to deceive the public; (2) practicing under an assumed name; (3) lending of certificate or license to any other person; (4) the employment of unlicensed persons in the performance of any services for which an optometrist's registration is required by law.

GENERAL

Reunion of Ex-Interns—Former interns of the Old Cincinnati Hospital will assemble from all parts of the country at the Cincinnati Club, Cincinnati, February 21. A large composite picture has been made of the present living interns of whom there are about 200, and will be presented to each attending the dinner. The secretary of the Ex-Interns' Society is Dr. Samuel Zielonka, Vendomissa Building, Cincinnati.

Nine Per Cent of Drugs Detained—According to Mr. W. R. Wharton, chief of the eastern district, Federal Food and Drugs Administration, U. S. Department of Agriculture, 9 per cent of the total drugs examined during the year ended July 31, 1930 were detained as violating the federal Food and Drugs Act. The district examined 2,763,620 pounds of cod liver oil of which 444,389 gallons was detained. More than 250 varieties of crude drugs offered for importation were covered in 3,593 shipments, which totaled 61 million pounds exclusive of cod liver oil. Mr. Wharton says that importers of crude drugs can assist in the correction of conditions leading to the necessity for detentions of illegal products at American ports by specifying only lawful merchandise. In order to bring about fundamental correction of abuses in the import trade in crude drugs, the administration seeks the support and cooperation of importers in enforcing the Food and Drugs Act. The following examples indicate the reason the drugs were detained: (1) recomite moldy; (2) roses, excessive moisture; (3) cinchona low alkaloids; (4) cod liver oil, adulterated with other fish oils high free fatty acids; (5) ergot, low potency and excessive foreign matter; and (6) ipecac, low alkaloids.

Medical Bills in Congress—Minority views, in opposition to the enactment of S 255, the Jones maternity and infancy and rural hygiene bill, have been filed by Representative Merritt, Connecticut, and Representative Beck, Pennsylvania. S 2817 has passed the Senate amending an act entitled "An Act to recognize the high public service rendered by Major Walter Reed and those associated with him in the discovery of the cause and means of transmission of yellow fever," by including Roger P. Ames among those honored by the act. S 5984 has passed the Senate, authorizing the construction, for the District of Columbia, of a sanatorium for adult tuberculous patients. H R 3394 has passed the Senate, providing for the deportation of aliens convicted and sentenced for violation of any law regulating traffic in narcotics. H R 6997 has passed the Senate providing free hospitalization for certain persons who served in the Quartermasters Corps or under the jurisdiction of the Quartermaster General during the war with Spain, the Philippine Insurrection or the China relief expedition. H R 12169 has passed the House proposing to define what constitutes the practice of naturopathy in the District of Columbia. H R 16162 has been reported to the House, without amendment proposing to extend hospital and home facilities to veterans of the Confederate army and navy (Report 2598). S Res 437 introduced by Senator Broussard, Louisiana, proposes to direct the Secretary of Commerce to furnish the Senate with copies of all cooperative or other agreements between the Bureau of Mines and any manufacturer of wood alcohol. S 5949 introduced by Senator Bingham, Connecticut, proposes to authorize the enlargement of the veterans' hospital in Connecticut. S 6090 introduced by Senator McKellar, Tennessee, and H R 17034 introduced by Representative Britten, Illinois, propose to regulate the interstate transportation of methanol. S 6097 introduced by Senator Wheeler, Montana, proposes to construct and equip a hospital on Crow Indian Reservation. S 6125 introduced by Senator Smoot, Utah, proposes to authorize an appropriation of \$20,877,000 to provide additional hospital and domiciliary facilities for veterans. H R 16915 introduced by Representative Leavitt, Montana, proposes to authorize the purchase by the federal government of the state laboratory at Hamilton, Mont., constructed for the prevention, eradication and cure of spotted fever. H R 16946, introduced by Representative Cable, Ohio, proposes the erection of a veterans hospital in northwestern Ohio. H R 16982 introduced by Representative Rogers, Massachusetts, proposes to authorize an appropriation of \$12,500,000 to provide additional hospital, domiciliary and outpatient dispensary facilities for veterans. This bill has been favorably reported. H R 17009 introduced by Representative Luce, Massachusetts, proposes to create a commission to study the hospitalization of veterans. H R 17031 introduced by Representative Fulmer, South Carolina, proposes to provide for federal cooperation with the several states in the care, treatment, education, vocational guidance and placement and physical rehabilitation of crippled children.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Jan 24, 1931

Pregnancy and Tuberculosis

At a joint meeting of the Tuberculosis Association and the obstetric section of the Royal Society of Medicine an important discussion took place on the subject of pregnancy and tuberculosis. Dr Geoffrey Marshall, tuberculosis officer of Guy's Hospital, said that academically every woman in this country could be said to be tuberculous, as every adult harbored bacilli, more or less. But a tuberculous woman meant one whose health had been seriously impaired by disease of the lungs. Should pregnancy be allowed to continue? Older writers, from Hippocrates to Sydenham regarded the pregnancy as beneficial to the lung disease, but more recent ones, including Osler, held that the pregnancy was a disaster. The pendulum was now swinging to a neutral position, but most physicians dreaded pregnancy in a tuberculous woman. If it had passed the fourth month artificial termination was rarely advisable, many would not sanction it later than the end of the second month. But in several cases it had been stopped in the fourth month without increasing the pulmonary trouble. In early pregnancy the guide was not so much the extent of the disease as its history. When the disease had only recently become active or had recently become quiescent, nonintervention would be difficult to justify. When the disease was chronic, pregnancy was seldom disastrous. Moreover, a patient in whom the disease had been arrested stood an anesthetic and the operation well but pregnancy badly. On the other hand, in the advanced or chronic case anesthetics were not so well borne, nor were operations, while pregnancy did less harm.

In the medical management, the important point was that pregnancy was an additional reason for inducing pneumothorax, if the case was suitable, i. e. the disease confined to one lung. In the puerperium the question of nursing arose. There was no hard and-fast rule. If pregnancy and parturition had been gone through without disturbance, no sudden change was likely to occur in the puerperium. If weight was not falling and there was no pyrexia nursing might in most cases be allowed.

The obstetrician's standpoint was put by Mr Aleck Bourne of St Mary's Hospital. He first referred to the conflict of opinion as to the effect of pregnancy on tuberculosis and the treatment. This he attributed to the fact that no one observer had sufficient experience of both aspects of the question and therefore views were based on inadequate material. His own view, formed after twelve years work in an infirmary was that tuberculous women should be informed that pregnancy was of no consequence when the lesion was healed and inactive but unfortunate when the disease was active and disastrous when advanced. Abortion in general had no place in the treatment. In the puerperium the essential thing was to disallow lactation and if possible to remove the child from the danger of infection. For phthisis as for other diseases the proper course was to treat the disease and leave the pregnancy alone.

Another obstetrician Mr L. C. Rivett of Queen Charlotte's Hospital said that in active tuberculosis abortion should be induced for the sake of both mother and child. Any woman who had active tuberculosis should receive sanatorium treatment during the whole of her pregnancy and for six months afterward. The tuberculosis had little effect on the pregnancy; there was no particular tendency to abortion. The child was usually on the small side and there was no reason to interfere with the labor especially as anesthetics were inadvisable. There was no tendency to postpartum hemorrhage, sepsis or subinvolution. He advocated no nursing.

In the discussion, the same differences of opinion between the physicians and the obstetricians were revealed. Thus, Dr Jane Walker was surprised at the opposition to nursing. Her own view was that it was an advantage to both mother and child that nursing be allowed. On the other hand, there was general agreement as to the artificial termination of pregnancy only in the early stages and as to the value of the pneumothorax treatment. The hope was expressed that the ministry of health would, as the result of the discussion make provision for the treatment of pregnant tuberculous women. But Dr Jane Walker pointed out that after consulting with Dame Louise McIlroy, professor of obstetrics at the London School of Medicine for Women, and herself, the London county council had under consideration a scheme for tuberculous women to be sent to a sanatorium for confinement and the ensuing six months. But it was found that the women objected to going.

Influenza in England

Influenza is prevalent in England, as it often is at this time of the year and as it is at present in other parts of the world, but its virulence is low. For the week ended January 17 there were registered in the 107 county boroughs and large cities 146 deaths from influenza, of which 27 were in London. For the previous week the numbers were 101 and 16. An influenza wave usually lasts about six weeks. The disease has reached epidemic prevalence at Aldershot where a large number of troops are always stationed, but the majority of the cases are mild. The usual precautions for an epidemic have been taken. Soldiers have been advised to avoid crowded places and to gargle night and morning with a mixture of potassium permanganate and sodium chloride. Meetings at the military welfare centers for women and children have been canceled.

Is Cancer Stimulated by Radium?

The Medical Research Council has just issued a report summarizing the records received from the research centers in London, Birmingham, Cardiff, Aberdeen and Dublin, which have been entrusted with stocks of radium salt by the government in order to investigate its curative powers. In the years during which roentgen rays and radium have been used as therapeutic agents two questions have from time to time been asked and have evoked discordant replies. One is: Do some people exhibit idiosyncrasies to irradiation? The other is: Do the rays occasionally stimulate malignant growths to increased activity? On the first question the report states that every now and then a patient of unusual sensitiveness does appear. On the second question opinions differ widely. There are several possible modes of stimulation of malignant cells. On the general principle, established for so many drugs that large doses and small doses may act in opposite ways it might be thought that living cells can be stimulated by very small doses of irradiation. In the vegetable world both positive and negative results have been reported and some observations suggest that this may hold for malignant cells but they are too few for definite proof. Another way in which radiation may possibly stimulate malignant growths is by giving a considerable dose to a growth already infected with bacteria. Here a total different series of events must be visualized for the reaction of a malignant growth to irradiation is partly caused by the direct action on the cells themselves and partly by indirect action on the normal tissues of the host. In the case of infected growths it is perhaps rational not to expect the normal series of reactions and in extreme cases it is possible that malignant growths do increase at a more rapid rate than they otherwise would in spite of the damage the malignant cells themselves may have suffered from the direct radiation. The report draws attention to a case at the Middlesex Hospital in which progress of the disease seemed to be accelerated by the treatment. Whether this resulted from the opening up of fresh channels by the needles that were inserted or from the action of the

rays on the cells or surrounding tissue cannot be said. Which of these alternatives is correct is clearly a question of fundamental importance in radium therapy.

Definite lines of treatment by radium for different parts of the body have now been approved as effective. Particularly good results have been obtained from the Paris and Stockholm methods, which differ only in small details. Great Britain has been late in obtaining such adequate supplies of radium as have been available on the continent for several years. But it has already won respect by its contributions to radium therapy, and it may yet be that a 'British method' for some of the more resistant regions of the body may receive approval. It is already clear that some persons are especially sensitive to radium and that their sensitiveness has to be carefully estimated before conducting the treatment. In some cases, again, the rays seem to stimulate rather than to destroy the malignant growth.

The Control of Opium Smoking in the Far East

The report of the commission of inquiry into the control of opium smoking in the Far East came before the council of the League of Nations at Geneva. The conclusions of the commission were that all measures aiming at gradual suppression should be taken concurrently in each country, that it was necessary to secure the gradual limitation of poppy cultivation, that the price of government opium should be reduced so as to make smuggling unprofitable, that government opium should be distributed through only state controlled shops, that smoking should be prohibited to any one under the age of 21 years, that the consumption of drugs being more harmful than that of opium, its strict control must also be established, and that governments that derive revenue from the sale of opium must readjust their budgets. It was decided to accept the invitation of the Siamese government to hold a conference on opium smoking in Bangkok in November.

The Relation of Physicians to the Clergy

The question of faith healing and the relations of the clergy with physicians in the treatment of the sick have become prominent subjects in the discussions of the Church of England, partly as the result of the considerable support given to so-called Christian science, which has been introduced into this country from America. At the convocation of Canterbury, just concluded, there was a discussion regarding the ministry to the sick, with especial reference to the use of unction and the laying on of hands. Rev. T. F. Mountrun said that much so-called faith healing was due to natural causes, and the faith that was necessary was subjective rather than objective. That was why they saw so many cures from so-called Christian science. It should be emphasized that what they were doing in unction was something for the soul, and a secondary consequence might be the healing of the body. The Bishop of Woolwich said that for the first time in history all the bishops of the Anglican communion had approved of the principle of spiritual healing and it seemed fitting that a special form be adopted for use. Physicians were realizing more and more the necessity of spiritual agency in their work. They had no antagonism to the clergy but were perfectly willing to cooperate and it was that cooperation the church wanted to bring about. The church had neglected spiritual healing too long and in consequence there had been a growth of Christian science.

Presentation to Sir D'Arcy Power

Sir D'Arcy Power, who has just returned from lecturing in America, has been presented with a volume of selected writings from his own work in commemoration of his seventy-fifth birthday. The presentation was made at Sir D'Arcy's hospital, St. Bartholomew's, by Lord Moynihan, who described him as the most eminent medical historian of our day. The *British Journal of Surgery* had greatly benefited by his unrivalled knowledge of

surgical history. Of the sixteen articles in the commemorative volume, all but two are on historical or biographic subjects. The two surgical articles are on the palliative treatment of mercury and on cancer of the tongue. Sir D'Arcy makes the important point that there is no record of the latter disease before 1635 and that its increase has been parallel with the increased use of tobacco.

PARIS

(From Our Regular Correspondent)

Jan. 7, 1931

Hypotensive Properties of Sodium Oleate

In an address delivered before the Société des médecins des hôpitaux de Paris, Dr. Maurice Renaud called attention to the unexpected effect of a marked reduction in blood pressure following the intravenous injection of a solution of sodium oleate. The mechanism of its action appears to be quite different from that of substances that act on the vasomotor system. From researches made thus far, it is evident that the intravenous injection of sodium oleate does not cause disorders in the organism that need be feared. It acts on the arterial pressure, causing a steady and permanent reduction after the lapse of several hours which amounts to from 6 to 10 degrees on the Pichon sphygmomanometer; the minimum pressure declining almost parallel with the maximum pressure while the oscillographic relation increases. The action appears to be more effective, the higher the pressure is. In persons with high blood pressure, injections of sodium oleate cause regularly a marked lowering of the arterial hypertension and appear to be by far the most effective means for diminishing the dangers. Finally, while the physiologic mechanism remains to be studied, what is known of the properties of soaps leads to the belief that the injection of sodium oleate causes only purely physical modifications in the conditions of the circulation. The study of the problem ought to elucidate the pathogenesis of hypertension.

The Sanitary Control of Aviation

Discussions on the sanitary control of aerial navigation resulted in the promulgation of several resolutions by the permanent committee of the International Bureau of Public Hygiene, at its recent meeting in Paris. Several countries have regulations on this subject, some of which are rigorous. The committee expressed the view that it would be well to present a typical set of regulations that might serve as a model for all countries, in order that uniformity might characterize their administration. A subcommittee was appointed and authorized to appeal for aid to the Commission internationale de la navigation aérienne. The subcommittee concluded that, under present conditions, which are subject to change from day to day, it would be premature to try to establish a set of regulations or even general principles, and that the regulations adopted, such as they are, will necessarily, at the start, be subject to more or less complete revisions. The committee emphasized again the danger of patterning regulations of sanitary defense, as affecting aerial traffic after the regulations governing maritime navigation. The point was stressed that the risk of dissemination of disease by airships is relatively slight by reason of the class of passengers and the conditions existing in the landing ports. It decided therefore, that the International Bureau of Public Hygiene, in advising the governments and the organizations interested of the conclusions reached with reference to the question of international sanitary regulation of aerial navigation, should call their attention to the principles adopted by the committee at its session last May, that is to say: (a) established landing fields, (b) medical examination on arrival, (c) sanitary surveillance of persons coming from infected regions, (d) in special and exceptional cases rendering such measures necessary, strict isolation during the port calls. To these it would be well to add two others:

1 The buildings, the occupants, and, in general, the whole area of the airports, should be maintained in an absolutely sanitary condition, and the precautions, in the yellow fever regions, should include mosquito proofing and measures for the destruction of mosquitoes. 2 Wherever the need is felt, special arrangements should be made for the creation of a system of communication between the physicians of the airports located on the same route, concerning infectious diseases. It should be emphasized that these recommendations do not include the institution of a system of clearance papers such as is employed in maritime navigation nor do they provide for the 'observation' of passengers. In this connection, in recent research, Pettit, Stefanopoulou and Roubaud showed that the Algerian monkey is highly susceptible to yellow fever. They ascertained that the species of *Stegomyia* in regions exempt from yellow fever are just as capable of transmitting the virus as are the species of *Stegomyia* found in endemic regions. Particularly, the species of *Stegomyia* found in northern Africa is capable of being the vector of the virus. These facts are important for hygienists to know at this time when airships may transport a yellow fever patient who is still infectious to a country is yet exempt.

International Exchange of Professors

At the request of Mr Briand, the minister of foreign affairs who desires to promote the international exchange of university professors, the minister of public instruction requested the council of the Faculté de Paris to designate an eminent professor who would be invited to deliver a number of lectures at the University of Paris. Accordingly at the request of the Faculté de Paris Professor Jadassohn of Germany came to Paris and delivered three lectures on dermatosyphilography. The topics were (1) hematogenic toxidermias (2) relations between the allergy, the histologic structure of dermatoses and the number of micro organisms and (3) discussion of anti-syphilitic treatment. Professor Jadassohn discussed from his wide experience, the present state of knowledge of these three great questions pointing out what had been acquired and what was still hypothetical, what remained unknown, and what lines of research should be pursued. The lectures were delivered before practically all the dermatologists of Paris and many other physicians and students, both French and foreign.

Report of the Sanitary Inspection Service of Paris

Mr Roeland member of the municipal council of Paris, has recently published his report on the veterinary sanitary inspection service of the city of Paris and of the department of the Seine. It will be noted that rabies has almost entirely disappeared although the number of dogs has increased. From 166,917 dogs in Paris in 1924 the number had risen in 1929 to 230,674. In spite of this marked increase only ten cases of rabies in animals were observed. There were no cases of rabies in man. The report of Mr Roeland brought out the fact that the consumption of meat has diminished likewise less poultry and game were consumed. On the other hand the Parisians seem to be eating more fish mollusks and crustacea. Paris received 179,661,009 eggs. All these food products were subjected to strict sanitary control the details of which Mr Roeland describes. The report gives a detailed account of the sanitary control of milk to which great importance is attached in spite of the opinion of a government official to the contrary. The control of milk is effected through the vigilant supervision by the services of the prefecture of police, which gives this matter particular attention.

Tuberculosis in the French Colonies

From an inquiry published by Dr Abitucci it appears that the diffusion of tuberculosis in the French colonies follows the same laws as in Europe. It is rare in regions where the natives live in scattered dwellings with rare contacts with

white persons. But following such contact, the disease, evolving in a virgin soil, develops rapidly. In Africa that fact is evident. Tuberculosis is common on the coast and diminishes rapidly in frequency as one penetrates to the interior. When the black troops were brought to France, during the war, the Senegal contingents, as a result of careful examinations on their arrival in the camps at Frejus and at Saint Raphaël, were found to present only from 4 to 5 per cent of positive skin reaction. Tuberculous morbidity in them increased rapidly as the war progressed and at the close of 1919 amounted to 23 per thousand. It was only 4 per thousand in 1923 and 1924, on their return to Africa. Tuberculosis is widely prevalent in the Indies, on Reunion Island in Guiana, and especially in the colony of Saint Pierre and Miquelon, where its development is favored by the spread of alcoholism. In New Caledonia a French penal colony, former convicts who have become colonists have spread the disease among the natives, who were previously immune. In Madagascar, tuberculosis is frequent among the Hovas of the high plateau regions but more rare among the inhabitants along the coast. In the Antilles, the blacks, during slavery times, living *en famille* with the planters were well fed and well taken care of and seldom developed tuberculosis. Having gained their liberty, they lived in promiscuity in unhygienic dwellings, so that the skin reaction to tuberculin is now around 40 per cent. In Indo China, tuberculosis is rare in Laos which is isolated owing to its mountain and forest frontiers but it is increasing in all other parts of the colony, which is due to the constant mingling of the races in the exchange of commodities. Its frequency is as in Europe in direct relation to the density of the population. In Cochinchina, with a dense population, the proportion of positive skin reactions reaches 67 per cent as in Europe. It is in this province that the government has undertaken an antituberculosis crusade on the same basis as in France with the aid of the services of the Pasteur Institute at Saigon. The organization comprises dispensaries open in schools for suspected children, sanatoriums and, in the hospitals, special wards for the treatment of advanced cases. At the same time a publicity campaign is carried on in the native language by means of leaflets and articles in the press, which the teachers are requested to call attention to in the public schools and by the aid of lectures and the projection of films. Vaccination with the BCG vaccine is applied to the new born in Indo China and in French West Africa to adults with a negative skin reaction in Madagascar and in French West Africa and to men beginning their military service in France and in the colonies. The laboratories of Saigon, Tananarive and Dakar receive from the Pasteur Institute in Paris the required strains of organisms with which to prepare the vaccine on the ground under the best possible conditions.

RIO DE JANEIRO

(From Our Regular Correspondent)

Jan 15 1931

The Third Normal Heart Sound

Dr J. Barbosa Corrêa assistant physician to the Clinic of the Faculty of Medicine of São Paulo recently lectured on the diagnosis of cardiac murmurs. He described the characteristics of the third heart sound which although described in 1907 by means of graphs by Enthoven and clinically by Gibson is still unknown to some clinicians. The speaker was able to discover the third cardiac sound while auscultating the hearts of normal students aged from 18 to 21 years. The phenomenon which appears at the beginning of diastole is characterized by a brief weak sound with greatest intensity at the moment of its cessation. The strokes of the third heart sound may be represented thus: TLM-ta-tum TLM-TA-tum. In some cases the intensity of the sound increases during the examination the patient is placed in lateral decubitus on the left side, after having taken moderate exercise. In some cases the sound is so characteristic

that this procedure is unnecessary. The site of the greatest intensity of the sound is the apex. Owing to the fact that the sound is weak, it cannot be heard in other cardiac areas. The mechanism by which the third heart sound is produced has been explained by some authors as being due to the sudden distention of the ventricular wall caused by the first flow of blood while the latter enters the ventricle at the beginning of diastole. According to other authors the third sound is caused by vibrations of the auriculoventricular valves when they are opened by the force of the blood while the latter goes into the ventricles. The differentiation of the normal sound from the pathologic murmurs that arise during the prediastolic stage is important, since both the normal prediastolic sound and some accidental murmurs that are characteristic of mitral stenosis are heard at the apex. That is why some cardiologists have admitted the possibility that a diastolic murmur may simulate the second heart sound. Sometimes the diastolic murmur is short and the diagnosis of its presence is rather difficult when no other symptoms of aortic insufficiency are present. In doubtful cases of this nature, in order to make a differentiation of the sound as being either normal or pathologic the following considerations should be kept in mind. According to Lewis's observations, the presence of a prediastolic murmur independent of a presystolic murmur in patients with mitral stenosis points out that there exists a delay in the conduction. Josue has demonstrated that, in the auscultation at the jugular vein, a weak sound preceding the first heart sound is heard at the moment of the contraction of the auricle, which sound gives the impression of a presystolic cantering rhythm, whereas, if there is a delay in the conduction, the sound that corresponds to the systole will arise just after the second heart sound. In auscultation over the jugular vein, the prediastolic murmur caused by mitral stenosis is heard in association with a rhythm similar to the prediastolic gallop, while the normal prediastolic sound, that is, the third heart sound is heard in association with a rhythm which is similar to the presystolic gallop. Once the third heart sound is known it cannot be mistaken for pathologic bruits, which have a different site of greatest intensity and which give a different acoustic impression. There are, however, some bruits, such as is the case with the prediastolic murmur, which give the same acoustic impression that the normal heart sound gives. The differentiation is made because the third normal heart sound is observed in healthy young people without symptoms of cardiac diseases. When the differentiation between the conditions mentioned is difficult, electrocardiography, and sometimes sphygmomanometry, is of value in solving the diagnostic problem.

Tracheobronchial and Tracheo-Esophageal Fistulas

Dr. Mangabeira Albernarz recently published an article on the relations between the respiratory passages and the digestive tract. He points out the most frequent localizations of tracheobronchial and tracheo-esophageal fistulas and the etiologic factors that are involved in the development of the fistulas. Cancer is the most common origin, coming next in importance to congenital fistulas, of which the author has found 222 in his review of the literature. Syphilis is rarely the origin of this type of fistula. Out of 639 cases reviewed in the literature only 20 cases were syphilitic. Etiologic factors of less importance in the formation of this type of fistulas are tuberculosis, actinomycosis, internal or external trauma and decubitus of the patient or some other similar cause. One patient developed a fistula after having been wounded by a gun. The bullet went in 1 cm. to the right of the median line and 2 cm. above the clavicular articulation and it was lodged at the opposite side in the interior border of the trapezium. Great care was taken to avoid the development of a deglutition pneumonia and also of mediastinitis as possible complications of the wound. A prophylactic mediastinotomy according to Maschik's method was made. Notwithstanding these precautions the patient died in a violent

hemorrhage due to the rupture of the left vertebral artery which was injured by a fragment of the seventh cervical vertebra. The fracture of the vertebra had not been discovered. The author considers this case rare.

Trachoma

Drs. Fabio Belfort and Flury de Silveira recently delivered lectures before the Sociedade de Medicina e Cirurgia de São Paulo on their studies of trachoma. The speakers concluded that trachoma is a contagious disease. The bacteria of trachoma are not detectable by the methods available for the visualization of bacteria. The statement previously made that trachoma is a condition of chronic conjunctivitis which results after one or several attacks of acute conjunctivitis, either insufficiently treated or not treated at all during the acute inflammatory stage is incorrect. Acute conjunctivitis of a chronic type is caused by *Hemophilus* of Koch-Weeks and by *Hemophilus* of Morax-Axenfeld. Trachoma may be treated by the nasal route. Trachoma may have a subacute beginning, it is not associated with ocular suppuration and it is not in all cases a chronic disease. Adults are not immune to trachoma and there is not less resistance to the disease in adults than in children. Care of oneself and the observance of hygienic precepts prevent contagion. The patient studied by the authors was 55 years old.

BERLIN

(From Our Regular Correspondent)

Jan. 19, 1931

Germany's Physicians

According to the 1931 edition of the Reichs Medizinischer Kalender für Deutschland, Part II, Medical Handbook and List of Physicians comprising statements in regard to all physicians of the German Reich, a list of all hospitals and sanatoriums, a survey of the medical organizations of Germany, and similar material, there were about 50,000 physicians in the Reich exclusive of the Saar region as of October, 1930 and in addition 396 physicians in the Saar region and in the Free City of Danzig. In recent years, the number of physicians has increased much more slowly than during the first years following the inflation period. Women physicians have increased more rapidly than the total number of physicians. Whereas in 1909 there were only 82 women physicians, or 0.27 per cent of the total number of physicians, in 1930 there were 2,807 women physicians, or 5.95 per cent of the total number. The contingent of women among the new graduates has increased so rapidly that for each ten men physicians there are more than two women physicians. The marked decrease in the number of newly licensed physicians explains the noticeable lack of assistants. Over against the small number of newly licensed physicians stood a total of about 1,800 deceased physicians in the years 1929 and 1930, so that the past two years has not added materially to the excess of physicians and the apparent increase in the number of physicians in these two years is doubtless due to the fact that recent statistics are more accurate. This development, however, does not promise any lessening of the high percentage of physicians for the number of students who have passed the preliminary tests and the number of medical students do not indicate any decrease in the number of physicians for the immediate future. The increase in the number of medical students will soon effect an increase in the number of newly licensed physicians. On the other hand when the youths born during the war years enter the medical schools—especially if the present economic stress continues—there will doubtless be a reduction in the number of medical students. Furthermore the gradually increasing medical tasks that will result from the proportionate increase in the representation of the higher age groups in a few decades furnish increased employment for the medical profession, so that the economic crisis among the medical profession due to the excess

of physicians will then presumably yield to better economic conditions. In the meantime, until it becomes more evident just how things will be going, an endeavor must be made to prevent a too rapid growth of the medical profession, in order that the present crisis may not rest too heavily on the profession.

Of the 49,974 physicians in the German *reich* there were 2,794 physicians who were directors of institutions and 7,041 physicians who occupied other posts in institutions, exclusive of the physicians serving in roentgen institutes, laboratories, pathologic institutes or polyclinics. In addition to the aforementioned institutional physicians, there were 37,246 free practitioners and 2,893 physicians who have retired from active practice.

Of the total number exclusive of the 2,893 nonpracticing physicians, which constitute 5.8 per cent of the total 32,629 are general practitioners, which includes the specialists in physiotherapeutic therapy, roentgen diagnosis and therapy, medicomechanics and diseases of the mouth and the jaws, and 14,452, or 28.9 of the total, include the other specialties. Of this number, 24.4 per cent are internists, 16.7 per cent are surgeons, 11 per cent are gynecologists, 8.2 per cent are pediatricians, 6.4 per cent are psychiatrists or neurologists, 9.1 per cent are oculists or ophthalmologists, 10.2 per cent are laryngologists, rhinologists and otologists, and 1.4 per cent are dermatologists and urologists.

The percentage of physicians in a given area is naturally greatly affected by the large cities and the universities. There is an especially high percentage of women physicians in the large cities.

Eruptions Induced by the New Style of Hats

Prof W. Frei, writing in the *Deutsche medizinische Wochenschrift*, calls attention to skin eruptions on the head, induced by the present style of hat worn by women. He has observed four such cases recently, so that he is convinced that the eruption must be of common occurrence. The disorder has nothing to do with hair tonics and hair dyes, which are the more frequent cause of eruptions on the head. It may, however, have some analogy to the eczemas observed, a few years ago, on the heads of men, which were caused by hat sweat bands made of artificial leather, employed to some extent during the inflation period for the headdress of women is apparently the inducing cause. The four women who presented the irritative and stubborn eruptions had all worn the tight-fitting hats that are now so much in vogue, and the eczemas corresponded precisely to the areas of the scalp against which the hats rubbed. While the localization of the eruptions pointed plainly to the hats as the inciting cause, this assumption was proved by means of irritation tests that Professor Frei carried out with the black lining and the black felt of the hats on the backs of the wearers. Other women, to be sure did not react to these irritation tests, hence it is evident that the disorder is based on a peculiar hypersensitiveness of the women affected. This hypersensitiveness is not directed against the fiber material of the hats but against the chemical substances contained in such material. That black dyes are concerned is possibly due to the fact that the dark color tones are dominant in the present style of hats. Likewise, it is doubtless due to the present style that the disorder is at present so common for the tight fitting hats such as are now worn bring the dangerous substances in so much closer contact with the scalp than was formerly the case. As the eruptions are persistent and highly irritative it is to be hoped that a change in the style will soon put an end to the eczemas.

Institute for the History of Medicine

Prof. Dr. Paul Dürpen, the medical historian, who was called from Freiburg to Berlin about a year ago, spoke recently before the Berliner Gesellschaft für Geschichte der Naturwissenschaften, Medizin und Technik on the aims and tasks of

the new institute for the history of medicine and the natural sciences, the erection, equipment and direction of which he took over on assuming his present post.

The institute has a suite of twenty-five rooms in a former bank building. The chief equipment consists naturally of the library treasures, which are, in part, so valuable that they are preserved in a special depository left by the bank. At present, the library comprises 10,000 volumes. In addition, there is a special pharmaceutical collection of 2,000 pieces. A larger seminar room, which is well adapted for lectures, serves for the present as a reading room for the students. Then there are work rooms for the director, four assistants and other auxiliary personnel. The reading room, as well as the whole institute, will be open until a late hour. It is planned to organize the service so that the institute, by means of its comprehensive card filing system, will furnish information at any time on the existing literature in this particular specialty, in other words, a scientific source of information on a large scale. The principal task of the institute will be to instruct the students as to the importance of the problems of the history of medicine for the understanding of the medicine of the present day and to guide them in the making of independent researches in old documents, which has already led to historically important discoveries. At present, the institute is engaged in collecting material for the publication of an atlas of the history of medicine and of studies on Arabian medicine, in which latter task the orientologists of the university will cooperate.

Death of Professor Siemerling

Geheimer Medizinalrat Prof. Dr. Ernst Siemerling, one of the best known neurologists and psychiatrists, died, after a long period of suffering in the Charité Hospital, January 6, aged 73. This was the hospital in which he served many years previously as assistant under the nerve specialist Westphal. In 1893, after he had been appointed, a year previously, professor extraordinarius, he received a call to the University of Tübingen as ordinarius for psychiatry, and in 1900 he accepted an invitation to the University of Kiel, in the same capacity.

His scientific importance was far above the average. Importance attaches to his research on the delicate structure of the brain and the spinal cord; to his contributions to medicolegal psychiatry, to mental disease and crime and to the etiology of multiple sclerosis. His investigations on the incidence or softening of the brain among the female population of Berlin attracted considerable attention. After his retirement Geheimerat Siemerling led a quiet life in Berlin.

Marriages

GEORGE BRITAIN WALTON, Durham, N. C. to Miss Izzi Witherspoon of Greensboro, in Winston-Salem Dec. 12, 1930.

ROBERT C. ANDERSON, Johnson City, Tenn. to Miss Irene Hendrix of Petersburg, Va. in Bristol, Tenn. Nov. 8, 1930.

LILLIS COLUMBUS MOORE, Carthage, Miss. to Miss Catherine Preston Finney of Lexington, Va. in December, 1930.

JOHN W. GOOD, Cedar-town, Ga. to Miss Lois Bedwell of Cedar Bluff, Ala. in Center Ala. Dec. 5, 1930.

PIERRE WILSON MEADOR to Miss Ethel Marchant Hyde, both of Richmond, Va. in December, 1930.

JOHN JAMES BURR, Lake Linden, Mich. to Miss Marie Rahol of Iron Mountain, Nov. 11, 1930.

CLAYD WELSH, Aberdeen, Wash. to Miss Hazel Lehnert of Bismarck, N. D. in Seattle, recently.

VIVIAN P. SILGER, Collinsville, Ill. to Miss Jessie Little of Edwardsville, Nov. 27, 1930.

THOMAS W. KOON, Cumberland, Md. to Miss Fannie Hutson of Rawlins, Nov. 12, 1930.

THOMAS D. KECKICH, Gary, Ind. to Miss Helen Murat of Chicago, Nov. 27, 1930.

Deaths

Horace Bailey Pritchard, Syracuse N. Y., Syracuse University College of Medicine, 1904 member of the Medical Society of the State of New York and the American College of Surgeons, past president of the Onondaga County Medical Society, assistant professor of clinical surgery at his alma mater, served during the World War on the staff of the Hospital of the Good Shepherd, aged 51, died January 10, in Fort Lauderdale, Fla., of cerebral hemorrhage.

William Carlton Smith, Salem, Ore., University Medical College of Kansas City, 1898, past president and secretary of the Marion County Medical Society, at one time professor of anatomy, Willamette University Medical Department, served during the World War member of the state legislature, formerly on the staff of the Salem Hospital, aged 56, died, Dec. 24, 1930, in Portland.

Thomas Francis Reilly, New York, Bellevue Hospital Medical College, New York, 1896, member of the American College of Physicians, formerly professor of medicine, Fordham University School of Medicine, on the staffs of St. Vincent's Hospital, St. Elizabeth's Hospital and the Fordham Hospital, aged 59, died, January 24, of cerebral hemorrhage and arteriosclerosis.

Albert Buist Leeds, Poland, N. Y., University and Bellevue Hospital Medical College, New York, 1907, member of the Medical Society of the State of New York, health officer of the town of Russia and the villages of Coldbrook and Poland, served during the World War, aged 44, died Dec. 27, 1930, in the Faxon Hospital, Utica, of acute hemorrhagic pancreatitis.

Grant C. Markle, Winchester, Ind., University of Louisville (Ky.) School of Medicine, 1892, health officer of Winchester, formerly county coroner, and secretary of the city and county board of health, on the staff of the Randolph County Hospital, aged 62, died January 16, of injuries received when the automobile in which he was driving was struck by a train.

William Horton Pierson, Brooklyn, New York, Homeopathic Medical College, 1883, member of the American College of Surgeons, on the staffs of the Cumberland Street Hospital and the Prospect Heights Hospital, aged 73, died, January 29, in the Carson C. Peck Memorial Hospital, of chronic myocarditis, coronary sclerosis and chronic vascular nephritis.

William Duffield Robinson, Philadelphia, University of Pennsylvania School of Medicine, Philadelphia, 1880, past president of the Philadelphia County Medical Society, member of the American College of Physicians and the American Climatological and Clinical Association, aged 74, died, January 24, in the Lankenau Hospital, of pneumonia.

Burtis T. Green, Brookings, S. D., Hahnemann Medical College and Hospital, Chicago, 1903, president of the Madison County Medical Society, member of the American College of Surgeons, on the staff of the Wesley Hospital, aged 64, died, January 18, in the Midway Hospital, St. Paul, of ileus, following an operation for cholelithiasis.

Francis R. Sherwood, Oak Park, Ill., Rush Medical College, Chicago, 1888, at one time professor of surgery at the University of Illinois College of Medicine, formerly on the staff of the Cook County Hospital, aged 68, died, February 7, of arteriosclerosis and carcinoma of the rectum.

Arthur Abraham Husser, Havre, Mont., Bennett Medical College, Chicago, 1908, member of the Medical Association of Montana, served during the World War on the staffs of the Kennedy Deaconess Hospital and the Sacred Heart Hospital, aged 45, died, January 12, of pneumonia.

Hugh Thomas Nelson, Jr., Charlottesville, Va., University of Virginia Department of Medicine, Charlottesville, 1899, served during the World War, aged 54, died, January 15, in a sanatorium at Richmond, of hemorrhage of the femoral artery, which was pierced by a piece of glass.

John Merceur Green, Charleston, S. C., Medical College of the State of South Carolina, Charleston, 1891, member of the South Carolina Medical Association, formerly city health officer, aged 61, died, January 14, of arteriosclerosis and angina pectoris.

William Jay Donaldson, Commerce, Mich., Bennett College of Eclectic Medicine and Surgery, Chicago, 1898, formerly health officer of Commerce, aged 69, died, January 22, in the City Hospital, Pontiac, of injuries received when struck by an automobile.

Charles Hill Brooke, Baltimore, University of Maryland School of Medicine, Baltimore, 1891, coroner of Southwestern district of Baltimore city, aged 64, died, Jan. 28, in the Maryland General Hospital, of influenza and intestinal hemorrhage.

William M. Cole, Longview, Texas, Kentucky School of Medicine, Louisville, 1891, past president of the Gregg County Medical Society, for six years mayor of Longview, city county health officer, aged 66, died, January 5, of cerebral hemorrhage.

Oren Howard Cobb, Syracuse, N. Y., Johns Hopkins University School of Medicine, Baltimore, 1906, member of the American Psychiatric Association, superintendent of the Syracuse State School, aged 50, died, January 23, of heart disease.

James Hennessy, Emmetsburg, Iowa, Keokuk Medical College, College of Physicians and Surgeons, 1905, member of the Iowa State Medical Society, for many years county coroner, aged 55, died, January 15, in a local hospital, of pneumonia.

Erastus Thomas Barker, Oklahoma City, Okla., Memphis (Tenn.) Hospital Medical College, 1899, served during the World War, aged 60, died, Oct. 16, 1930, in the U. S. Veterans Hospital, North Little Rock, of cerebral hemorrhage.

David Wise, Carthage, Mo., St. Louis College of Physicians and Surgeons, 1892, Beaumont Hospital Medical College, St. Louis, 1893, member of the Missouri State Medical Association, aged 60, died, Dec. 9, 1930, of myocarditis.

Charles Allen Lamson, New London, N. H., Dartmouth Medical School, Hanover, 1891, member of the New Hampshire Medical Society, served during the World War, aged 65, died, Dec. 29, 1930, of cerebral hemorrhage.

Christopher Freeman Chaffe, Rochester, N. Y., Medical Department of the Tulane University of Louisiana, New Orleans, 1906, for twenty years county bacteriologist, aged 49, died, February 2, of gastric ulcer.

Jacob Lazar Hausman, Marysville, Kan., Ensworth Medical College, St. Joseph, 1895, member of the Kansas Medical Society, formerly health officer, aged 69, died, February 2, in Columbus, Ohio, of leukochemia.

Porter Morrison Wall, Monongahela, Pa., Western Pennsylvania Medical College, Pittsburgh, 1904, served during the Spanish American and World wars, aged 53, died, January 16, in Pittsburgh, of chronic arthritis.

John William Humphries, Culpeper, Va., George Washington University Medical School, Washington, D. C., 1906, member of the Medical Society of Virginia, aged 51, died, January 14, of heart disease.

Edward T. Printz, Moulton, Iowa, College of Physicians and Surgeons, Chicago, 1884, member of the Iowa State Medical Association, aged 74, died, January 12, of injuries received in an automobile accident.

Daniel T. Merritt, Nathalia, Va., University College of Medicine, Richmond, 1896, member of the Medical Society of Virginia, member of the school board, aged 61, died, January 19, of heart disease.

James Truman Reeves, Ferriday, La., Baltimore University School of Medicine, 1904, aged 53, died, January 14, in Natchez, Miss., of suffocation due to aortic aneurism pressing on the trachea.

John Quincey Holshfield, Tiptonville, Tenn., University of Tennessee College of Medicine, Memphis, 1919, aged 36, died, January 22, in the Baptist Hospital, Memphis, of pneumonia.

William B. Lyman, Boise, Idaho, Rush Medical College, Chicago, 1880, member of the Idaho State Medical Association, aged 75, died, Dec. 4, 1930, of myocarditis and coronary sclerosis.

George John Laben, Chicago, College of Physicians and Surgeons, Chicago, 1900, formerly served in the Indian Service, aged 62, died, January 14, of carcinoma of the urinary bladder.

Archibald Keightley, New York, University of Cambridge Faculty of Medicine, Cambridge, England, 1891, aged 71, died, Nov. 18, 1930, in St. Luke's Hospital, of angina pectoris.

John W. Gue, Caldwell, Idaho, Medical Department of Columbian University, Washington, D. C., 1894, aged 60, died, Dec. 26, 1930, in Boise, of arthritis and aplastic anemia.

Mark Hopkins Woolsey, San Francisco, Cooper Medical College, San Francisco, 1890, aged 64, died suddenly, January 28, of coronary sclerosis and occlusion.

Marie A Singletary, Denver Denver College of Medicine, 1898, Denver Homeopathic College, 1903 aged 75, died, Dec. 26, 1930, in St Luke's Hospital, of heart disease

Norton John Taylor, Berrinton, Kan., Penn Medical University, Philadelphia, 1865, member of the Kansas Medical Society, aged 88, died Dec 9, 1930, of cholecystitis

Ernst Jentzsch, Chicago, Bennett College of Eclectic Medicine and Surgery, 1901 aged 61 died, February 3, of myocarditis, chronic nephritis and diabetes mellitus

Martin L Harrell, Dallas, Texas, University of Nashville Medical Department, 1888, aged 69, died, Dec 6, 1930, of coronary thrombosis and pulmonary infarct

John H Moore ♂ Bridgeton, N J., University of Pennsylvania School of Medicine, Philadelphia, 1880, aged 75, died, January 2, in Maplewood, of heart disease

William Holt Worrell, Thomasville, Ga., Georgia College of Eclectic Medicine and Surgery, Atlanta, 1912, aged 48, died, January 16, of arteriosclerosis

John R Vinson, Callahan, Fla., Georgia College of Eclectic Medicine and Surgery, 1910, aged 45, died, January 9, in Leavenworth, Kan., of nephritis

Oscar H Fleming, Crestview, Fla. Atlanta Medical College, 1894, aged 62 died January 21, in a hospital at Florida, Ala., of intestinal obstruction

Edward B Mead, Sedalia, Ohio Starling Medical College, Columbus, 1888 formerly mayor of Sedalia, aged 70, died, January 21, of heart disease

Samuel F Price ♂ Jerome Idaho University of Michigan Medical School, Ann Arbor, 1891, aged 66, died, January 12, of streptococcal sore throat

Frances May McAdams, Bryan, Texas, University of Texas School of Medicine, Galveston, 1913, aged 45, died, January 6, of heart disease

Captain Hunter House, Atlanta, Ga. Georgia College of Eclectic Medicine and Surgery, Atlanta, 1907 aged 48, died, January 15, of pneumonia

Henry A Sutton, Marion Ind. Curtis Physio-Medical Institute Marion 1897, aged 83, died, January 19, of acute dilatation of the heart

Elmer J Taylor, Georgetown Ind. Kentucky School of Medicine, Louisville, 1902, aged 56 died, January 9, of acute pleurisy with effusion

William E Ryan, French Lick Ind. University of Louisville (Ky.) School of Medicine, 1882, aged 69, died, January 15, of arteriosclerosis

Adam T Mairs, Charleston W Va. College of Physicians and Surgeons, Baltimore, 1882, aged 74, died, January 10, of heart disease

Albert F Messner, Chicago, Hahnemann Medical College and Hospital, Chicago, 1890 aged 65, died January 18, of chronic myocarditis

William M Carter, Keokee, Va. (licensed Virginia by exemption), aged 66, died, Oct. 16, 1930, in Calvin, of cirrhosis of the liver

James B Jones, Garnett, Kan. (licensed Kansas 1901) Civil War veteran, aged 82, died, Dec 8, 1930, of carcinoma of the stomach

George Nathaniel Murphey, Paducah Ky., Kentucky School of Medicine, 1890, aged 78 died January 13, of heart disease

Minerva B Cushman, St Cloud Fla., Hering Medical College, Chicago, 1903, aged 74 died Oct 27, 1930 of heart disease

Sylvester A Broughman, Dayton Ohio Medical College of Ohio, Cincinnati, 1890 aged 73 died, January 18 of heart disease

Maximilian Pincus ♂ Chicago Jenner Medical College Chicago, 1908 aged 61, died January 25 of chronic myocarditis

Thomas A Finley, Rockville, Mo. (licensed Missouri 1883), aged 85 died January 18 of injuries received in a fall

Joseph C Shafer Noble Ill. Eclectic Medical Institute, Cincinnati 1907 aged 50 died January 19 of pneumonia

William G O Harra Los Angeles Chicago Medical College 1884 aged 71 died January 10 of heart disease

Charles H Fegers, Keokuk Iowa Keokuk Medical College 1895 aged 58 died January 19 of myocarditis

David L Weems Stark City Mo. Missouri Medical College St Louis 1882 aged 71 died Nov 30 1930

Bureau of Investigation

KOREMLU

A Dangerous Depilatory Containing Thallium Acetate

There has been on the market for some time a depilatory sold under the name of 'Koremlu Cream,' marketed first under the trade name 'Kora M Lublin,' more recently under the style 'Koremlu, Inc.," both of New York City. According to the advertising, Koremlu is "guaranteed to devitalize superfluous hair roots on face or any part of the body."

The preparation was first brought to the attention of the Bureau of Investigation by a Massachusetts physician, who sent in an article clipped from the *Boston Traveler*, published under the departmental title "Beauty—And How." The article purported to be by one V E Meadows, who was described as an "International Authority on Beauty." Meadows' article stated, in effect, that until recently, he had not been able to recommend any preparation for the removal of superfluous hair, but that he now was in a position to recommend a depilatory cream that would "not only remove hair, but devitalize the roots so that no more will grow." No mention was made in the article of Koremlu. A letter written to V E Meadows, however, asking for further information regarding the depilatory cream that he recommended brought the reply that it was Koremlu and advised the writer to get in touch with Kora M Lublin, who made it.

Soon after this, the Bureau of Investigation began getting inquiries regarding Koremlu and these have increased in frequency and number up to the present time. Some of these letters have reported that the Meadows person was on a 'lecture tour and was highly recommending Koremlu Cream. Among the letters thus received some contained hints and others definite statements that Koremlu had some thallium salt as its base.

The use of a thallium salt, in the form of acetate, as a therapeutic agent has been known for some years among dermatologists. It has also been known that thallium acetate is an extremely toxic substance. THE JOURNAL has reported many cases of death from thallium acetate poisoning when the substance had been given internally. As long ago as 1912, Dr. Sibouraud, a French authority on diseases of the hair and scalp, devised an ointment of thallium acetate for use in the removal of superfluous hair. Since that time, accidents have been reported from its use. Because of these accidents Sibouraud is said to have given up the method of using thallium for depilation purposes. The original Sibouraud prescription called for the introduction into the ointment of not over 1 per cent of thallium acetate. He repeatedly urged that even in this dosage one should use an amount of ointment not larger than two kernels of wheat, to be applied not more than once a day. Sibouraud has stated that if one uses an ointment containing a higher percentage or even applies an ointment having but 1 per cent of thallium acetate over any extended surfaces accidents may be expected. (See 'Paris Letter' JOURNAL A M A, January 18 1930).

It is equally well known by dermatologists that while thallium acetate whether taken internally or applied externally may result in complete baldness the condition is but temporary and the hair will return. Prof W E Dixon of Cambridge, who has done considerable experimental work with thallium salts, has brought out the fact developed experimentally that thallium induces a rapid growth of hair when administered to animals that have been shaved. He also reports that thallium salts exert no local action but when rubbed into the skin with oil or alcohol are readily absorbed and may produce systemic action. Incidentally the physiologic effect of ingesting thallium is mainly on the autonomic motor system, which becomes more sensitive so that electrical stimulation of nerves produces an exaggerated response.

Last November the Bureau of Investigation received an inquiry from a high-class department store in Baltimore asking for an expression of opinion regarding the possible dangers of Koremlu. The letter was written at the suggestion of Dr Charles R Austrian of that city. The Bureau of Investigation replied that Koremlu contained thallium that it is a

poisonous substance and mentioned the fact that there had been reported deaths from the therapeutic use of thallium compounds. There was further mentioned the fact that only a few weeks previously a letter had been received from a Baltimore physician regarding a patient who was acutely ill and who gave a history of having used Koremlu.

This reply to the request for information brought a week or two later a long letter from a firm of attorneys who stated that they had been retained by Koremlu Inc. to take action with reference to what were described as highly defamatory letters sent out by the Bureau of Investigation concerning Koremlu. The attorneys insisted that their client's preparation was not 'merely harmless but efficacious.' As a clinching argument they stated that the Health Department of the City of New York was entirely familiar with the product and its ingredients and had classed Koremlu simply as a cosmetic.



**and now those
UGLY HAIRS
can never
grow again!**

**A Written Guarantee assures the
permanent removal of unwanted hair**

THOUSANDS of women both here and abroad now know the joy of an alluringly smooth and beautiful skin free from the regrowth of ugly unwanted hair. The Koremlu Cream Method—the achievement of a noted French scientist—not only removes the hair for all time but actually is most beneficial to the skin itself.

Koremlu is a delightfully fragrant cream. You easily and quickly apply it to the hair like cold cream, and leave it on all night. The Koremlu Cream Method may be used with positive effectiveness on the face, legs, arms or any other part of the body.

The Koremlu Cream Method is guaranteed with

**KOREMLU
CREAM METHOD
of permanent
hair removal**

KOREMLU INC. 11 West 42nd St. New York

Reproduction (greatly reduced) of a column advertisement of Koremlu appearing in *Vogue* Feb. 1 1931

On November 6 *THE JOURNAL* received an inquiry from Dr. Milton Sherry of Baltimore regarding the ingredients of Koremlu. Dr. Sherry wrote in part:

Would you kindly let me know whether there is any lead or heavy metal present in this ointment which would produce a condition simulating lead poisoning with lead colic? The patient at the present time is acutely ill and an immediate answer would be greatly appreciated.

A few weeks later an interesting report appeared in the November 12 issue of the *Proceedings of the Staff Meetings of the Mayo Clinic*. It was entitled, 'A Case of Thallium Poisoning' by John Lansbury, M.D. The case was that of a woman of thirty-eight who was admitted to the Clinic with severe abdominal pain. The history was that five weeks before admission she started using Koremlu on her chin and upper lip. Two weeks later she was awakened one night with severe pains radiating across the thorax, a sense of constriction which made breathing difficult and sleeplessness. In the course of a few days the pain shifted to the lower extremities where it was felt mainly in the upper aspects of the thighs and the legs and toes. Later still she was seized with severe hypogastric pains accompanied by constant nausea and vomiting quite unrelated to food. At the time of admission she was doubled up with an intense abdominal pain, the breath was foul, the hair was loose and easily pulled out. A diagnosis of thallium poisoning was made. Five days after admission the patient was entirely

held except for a fringe of hair extending around the base of the skull above the ears. The eyebrows and eyelashes were not affected. Within two weeks, the texture of the skin had returned to normal and the hair was starting again to grow. The patient at that time complaining only of a peculiar feeling as though her legs did not belong to her. Dr. A. E. Osterberg of the Clinic analyzed the depilatory and reported it to contain a large amount of thallium. Another member of the Clinic staff, Dr. L. J. Birkles, found thallium in small amounts in the urine by spectroscopic examination.

On the same day that the Bureau of Investigation received the attorneys' letter from the Koremlu concern, it received a letter from Dr. Henry B. Potter of Walfield, R. I., enclosing a Koremlu circular and reporting an interesting case. To quote from the doctor's letter:

A woman came in to see me a short time ago with a jar of this ointment and an interesting history. She is of a masculine type strongly featured, has menstruated regularly every six months since puberty and has a strong beard (hard rather) that needed shaving every day. About three months ago she began rubbing this ointment into her face and her beard is almost gone, only a few fine hairs left on her chin. About two weeks ago her cranial hair began to come out rapidly and now she has not over a hundred hairs left. These hairs form a fringe at the rays of her neck and look as if their time is short.

On December 15, Dr. C. J. Noonan of Brooklyn, N. Y., wrote:

Have you any data on the constituents of the cream called Koremlu? I have a patient who has been using it on the lower limbs daily five months. She has developed a severe multiple neuritis of obscure origin.

On December 20, a dietitian connected with a hospital in Pennsylvania wrote:

I am interested in the cream known as Koremlu. People who are using it are experiencing pains appearing to be muscular in nature on the parts where this cream has been applied. Do you know the composition of it and can you give me any information which would prove or disprove that this product might be causing these pains?

In view of these reports and in spite of the fact that it was quite evident from information received from various sources that Koremlu contained thallium acetate, it seemed desirable for the information of the profession and the protection of the public that a detailed analysis of Koremlu be made and the Bureau of Investigation asked the A. M. A. Chemical Laboratory to make such an analysis. The Laboratory report follows:

LABORATORY REPORT

"An original jar of Koremlu Cream (Koremlu Inc. 11 West 42nd Street, New York City, price \$10.00) was submitted to the A. M. A. Chemical Laboratory for examination. The label on the jar bore the following statements: Koremlu Cream devitalizes superfluous hair roots. Will induce baldness wherever applied when used as directed."

The jar contained 69.8 Gm. (approximately 2½ ounces) of a light yellow ointment strongly perfumed. Qualitative tests indicated the presence of thallium, zinc acetate, petrolatum, trices or chloride and of saponifiable matter. Heavy metals (such as mercury, lead, arsenic and cadmium) sulphides, iodides, borates and silicates were not found. Quantitative determinations yielded the following:

Thallium (Tl*)	5.57 per cent
Zinc (Zn*)	7.68 per cent

"This may be calculated to

Thallium Acetate	7.18 per cent
Zinc oxide	9.56 per cent

"From the foregoing it is concluded that the product examined consists essentially of an ointment having a petrolatum base in which are incorporated approximately 7 per cent thallium acetate and 9.5 per cent zinc oxide."

In view of the chemists' report, it is again worth calling attention to the facts developed by Dr. Sabouraud. On the basis of long experience he declares that any ointment containing more than 1 per cent of thallium acetate is dangerous. Koremlu was found to contain over 7 per cent! Sabouraud insisted that no larger amount of his one per cent ointment than that equal to two kernels of wheat should be used at a time. No limit is given to the amount of Koremlu that should be applied! As the whole trend of the Koremlu advertising emphasizes that the stuff is harmless it is to be expected that women purchasing this product will apply it with the same

easy abandon that they use in applying face creams and vanishing creams. It is hard to believe that Kora M. Lublin, who seems to be behind this product, realizes the dangerous properties of the preparation she markets. It is kinder to assume that ignorance, rather than a callous disregard for public safety, prompts the sale of Koremlu!

There is one other point that seems to deserve some attention—that is, the wide discrepancy between the commercial value of Koremlu and its selling price. The approximate cost of the ingredients that go into a jar of Koremlu, selling at \$10, is less than thirty-five cents! This allows 27 cents for the thallium acetate, 1 cent for the zinc oxide and 4 cents for the petrolatum. However, Koremlu's assault on the public's pocketbook becomes a minor indictment, the major objection is its menace to the public health.

Correspondence

USE OF WHITMAN SPICA

To the Editor—In *THE JOURNAL* January 10 Dr. Walter I. Galland describes a "modified Whitman spica" for the treatment of fracture of the neck of the femur. In his opening paragraph Dr. Galland makes several statements which are so completely at variance with my own experience, and, I am sure, with that of every one who knows how to apply a plaster-of-paris spica bandage, that I am compelled to correct the impression the doctor creates, namely, that undesirable results attend the use of the ordinary or what Dr. Galland calls, a "full" spica. Dr. Galland says that

the application of a full spica extending from the ribs to the toes in an elderly patient is an expedient often fraught with serious consequences. On account of the dorsal decubitus which the spica necessitates plus the undue confinement of the costal cage with consequent diminution of the respiratory excursion the patient is exposed to the great danger of hypostatic pneumonia. Many patients who are treated for fracture of the neck of the femur in the classic spica succumb not to the fracture but to hypostasis in the pulmonary circulation.

In an experience that extends over a period of more than twenty years during which I have treated very many elderly patients with fractures of the hip, not only at the Hospital for Ruptured and Crippled but in several general hospitals, I have not had a single case of hypostatic pneumonia. This despite the fact that some of my patients were well over 80 years of age, and in one instance 93 years old. Dr. Galland's experience must indeed be unfortunate if "many patients treated in the classic spica succumb to hypostasis in the pulmonary circulation." I have been called to patients with fractured hips who had hypostatic pneumonia were suffering intensely and were in a deplorable state. But these patients were lying in bed without support and because of pain in the injured area could not be moved and were left in one position continuously.

Dr. Royal Whitman has repeatedly emphasized the need for proper protection of the body under any plaster dressing and for many years it has been the practice in treating a fracture of the hip to apply twelve layers of sheet cotton to the chest between the slurring and the plaster bandages. This provides a space of at least two inches and often more between the patient's skin and the plaster permits an expansion of the chest of at least four inches which is more than the average young adult has and surely more than the aged person has or needs and precludes any diminution of the respiratory excursion.

Dr. Galland further states that the spica necessitates dorsal decubitus. No such thing. One of the main advantages of a full plaster spica is that it permits free and frequent changes of position. A patient with a plaster spica can should and under proper treatment is turned on his face at least three times in the twenty-four hours and left in that position for at least an hour. In a well applied Whitman abduction spica there is nothing simpler than to turn the patient. I have often done it alone and my person nurse or attendant can be shown how to do it untroubled.

The primary requisite in the use of a plaster spica in the abduction treatment of a fracture of the hip is to appreciate every detail of the plaster technique. The skin should be thoroughly powdered. A smooth stockinet drawer extending from above the nipples to the toes is put on. The trunk and limb are enveloped in sheet cotton, twelve layers being used for the chest, from six to eight layers for the abdomen and pelvis, and from two to three for the thigh, leg and foot. A flannel bandage is then put on over the cotton, after which the plaster bandages are rolled on. The plaster is rubbed thoroughly to avoid wrinkles. When this dressing is completed there should not be, and there need not be any compression of any part of the body. On the contrary the plaster spica is a firm, smooth, comfortable support, completely relieving the patient of all pain.

The head of the bed should be raised on stilts from twelve to fifteen inches high. A fracture board must be inserted under the mattress to make the bed unyielding. Placed on this kind of a bed, the patient will be able to look about him and be entirely comfortable. The attendant should turn the patient on his face at least three times a day and the surgeon on his daily visit should put his hand under the plaster along the edges to make sure that there is no undue or unnecessary pressure.

There is no more comfortable or grateful patient than one with a fractured hip treated in a "competent" plaster-of-paris full spica bandage. Such a patient has plenty of room for breathing. He has frequent changes of position so that he does not get pulmonary hypostasis and does not die of hypostatic pneumonia.

SAMUEL KLEINBERG, M.D., New York

[NOTE—The letter of Dr. Kleinberg was referred to Dr. Galland who replies.]

To the Editor—It was not my purpose to belittle the importance or the wide applicability of the Whitman spica which I have used and which I feel I know how to apply. However, I do not think that the absolute comfort and safety of the elderly patient in the high spica is a universally accepted fact for I have observed that many physicians have difficulty in completely safeguarding such patients against the immobilizing effects of the high spica on the thorax. I have found the method of trimming, which I described to be both comfortable and effective, but I do not pretend that it is in any way a radical departure from the precepts of the Whitman method of treatment.

I agree with Dr. Kleinberg that my statement that the Whitman spica necessitates the dorsal decubitus is not entirely tenable as I well know the possibility of turning the patient in this spica. However, patients treated away from ample nursing facilities are frequently permitted to remain in the dorsal decubitus and the admonition that the patient be frequently turned is not always meticulously followed. Ability to free the costal cage more completely may at times be a desirable safeguard. It is obvious that if by a simple variation in the trimming of the plaster even a small measure of additional protection and comfort may be given to the patient without sacrificing the position of the fragments—one should certainly be privileged to vary slightly the classic spica of Dr. Whitman.

WALTER I. GALLAND, M.D., New York

FETUS PAPYRACEUS

To the Editor—In *Queries and Minor Notes* in a recent issue of *THE JOURNAL* (January 24, p. 291) under the heading, Complicated Twin Pregnancy, the following statement is made: A fetus papyraceus may also be found in the presence of triplets and in most of these instances two children are born alive and the third is a small compressed fetus. This I believe is not in accord with fact since in a review of the literature on the subject of papyraceous fetuses in triplet pregnancies (Beierlein K. M. *Am J Obst & Gynec* 21:97 [Jan.] 1931) I found twenty-one cases including one of my own or twin papyraceous fetuses as opposed to four cases of single

papyraceous fetuses in that connection. Since my paper was submitted for publication the number of reported cases in the first group has been augmented to twenty-two (Williams T M *Am J Obst & Gynec* 19 837 [June] 1930)

KARL M BEIERLEIN, M.D., Ann Arbor, Mich

"MISLEADING METHYL CHLORIDE PUBLICITY"

To the Editor—We have read your editorial "Misleading Methyl Chloride Publicity" (*THE JOURNAL*, January 24 p 272). Assuming that you present data to substantiate your criticisms it is, of course, your privilege to disagree with results that the Bureau of Mines may publish. However technical criticism is a different matter from indulging in such outbursts as that in your concluding paragraph.

"It is unfortunate that a branch of the government, the Bureau of Mines which has had such an enviable record in the past, has recently seemed to be swayed to serve more the interests of certain chemical manufacturers than to serve the interests of the public. It is laudible that the government should investigate general hazards to the public but it is quite unfortunate that independent action may be threatened by considerations arising from the fact that research is carried on under cooperative agreements."

For some years the Bureau of Mines has carried out investigations, through formal contracts with private individuals and private firms. They have gone to the Bureau of Mines presumably because of its experience, facilities and the integrity of its personnel. No one in the bureau is a penny the richer as the result of such work nor is the problem accepted unless it promises to produce information of value either to science, to industry, or to human welfare. The firm or individual submitting the problem pays the bill—as he should—but has no control over the prosecution of the work or of the results obtained.

With regard to the report on methyl chloride poisoning which you discuss, we wish to point out that you have ignored the earlier and much more extensive study of the compound which has already been published by the Bureau of Mines and in which the toxic properties of methyl chloride are fully described. Apparently you believe that the brief report on a single feature about which the Roessler & Hisslacher Chemical Company requested information, was the only one made.

We regard the series of papers from the Bureau of Mines—now appearing in *Public Health Reports*—on the toxicity of various new commercial solvents as an important contribution to industrial toxicology but not necessarily the final word. If you read these reports you will find the bureau has done a great deal more than search for "warning agents" which are not a guarantee of protection. Incidentally, your distinction between a toxic gas like ammonia which warns, and one to which a warning must be added, is subtle to say the least.

It seems to us that one of the important duties of the Bureau of Mines is to investigate the toxicity of new substances used in industry which may affect the public health. It represents an impartial agency for protection against hazardous advances made by industry. That its reports may be misrepresented in ill advised advertising is not a criticism of this bureau, but of the inability to control public misrepresentation. If the American Medical Association disagrees it would be more fitting for them to set up machinery to do the bureau's work than to make unsupported attacks upon the integrity of its personnel.

JOSEPH C AUB M.D. DAVID L EDWARDS M.D.
CECIL K DRINKER M.D. ALICE HAMILTON M.D.
PHILIP DRINKER CH.E. REID HUNT M.D.

NOTE—A careful rereading of the editorial in question should convince any one that its whole purpose is constructive. It does not attack the integrity of the personnel of the Bureau of Mines. It suggests merely the danger in a situation which may lay them open to such attacks.—Ed

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted on request.

USE OF POTASSIUM THIOCYANATE IN HYPERTENSION

To the Editor—Please give data on potassium thiocyanate in essential hypertension. How does it act? What are the dangers and contra indications?

F R GRAZIER M.D. Yorkville Ill

ANSWER—The fact that thiocyanate resembled, even exceeded, the iodide ion in solvent action on aggregations of colloids suggested its trial in conditions analogous to those in which iodide has been found useful, and it indeed, seems to resemble iodide in its therapeutic as well as in its untoward effects, excepting in one notable respect: it does not affect the thyroid gland. In view of present inability to account satisfactorily for the effect of iodides on the circulation, in spite of extensive studies and the elaboration of several theories, none of which have found general acceptance, it is not to be wondered at that the action of thiocyanate which has been subject to much less study, can not as yet be satisfactorily explained. The reduction of blood pressure is dependent on the dose. The small dose of 0.1 Gm (1½ grains) three times daily frequently fails to produce an appreciable reduction. It also does not, as a rule, cause unpleasant by effects though such have been reported in the form of uncomfortable weakness, angular symptoms, exfoliative dermatitis and corvex. It is well to use such dosage initially to test the patient's tolerance. The large dose, 0.3 Gm (5 grains) three times a day reduces blood pressure in a majority of cases within several days or weeks, but it is so liable to cause untoward results that patients receiving these doses must be under careful supervision. Not only are they liable to complain of intolerable weakness chiefly in the arms and legs and of vertigo but, especially if the dose is increased to 0.6 Gm (10 grains) three times a day, a toxic psychosis may become superadded with disorientation, hallucinations, mania, confusion, and ideas of persecution lasting perhaps a week after discontinuance of the dosage. As these psychic disturbances are quite regularly preceded by the stage of weakness, it is advisable to discontinue the drug with its onset and to resume a smaller dose after the feeling of weakness has disappeared. Definite contraindications do not seem to have been worked out excepting that severe kidney damage increases tendency to intolerance. The Council on Pharmacy and Chemistry refused admission of potassium thiocyanate to New and Nonofficial Remedies because it considered the evidence for the drug's therapeutic value inconclusive and published a report stating the limitations of therapy with this drug (*THE JOURNAL*, June 1, 1929 p 1838).

CRANBERRIES AND DIGESTION

To the Editor—Please advise whether the organic acid content of a usual portion of cranberry sauce with an average meal is an aid to digestion and whether the cranberries act as a stimulus to gastric secretion?

M D Illinois

ANSWER—The organic acid content of an average portion of cranberries with the meal is not capable of materially or significantly changing the degree of acidity (pH) of the gastric contents in normal gastric digestion. Because of the relatively small quantity of citric acid that would be ingested and its low ionization, since it is a weak acid it would exert no practical buffering effect. Under normal conditions of gastric digestion the hydrochloric acid pepsin factor of safety is large. Any acidity change of the gastric content attributable to the cranberries would but slightly affect this factor.

Citric acid the chief organic acid of cranberries given in adequate quantities in gastric hypo-acidity would probably exert a favorable influence on gastric digestion. So far as is known from the literature, the effect of citric acid on gastric secretion has never been investigated.

To one fond of cranberry sauce its ingestion will certainly excite a psychic secretion of gastric juice this is known to be true for orange juice also. Cranberries however, do not contain secretagogues or chemical substances other than citric acid which may stimulate gastric secretion on introduction into the stomach. There is a probability that they may stimulate pancreatic secretion when in the intestine.

CHRONIC ENDOCERVICITIS DURING PREGNANCY

To the Editor—What measures can you suggest which may safely be used in the treatment of chronic endocervicitis (nongonorrheal) during the latter half of pregnancy? What is the liability of postpartum infection from this source? Kindly omit name
M D New York

ANSWER—If chronic endocervicitis does not produce annoying symptoms it is best left untreated during pregnancy. A few weeks after delivery it should be treated, chiefly by means of the electrical cautery. If, however, symptoms such as bleeding or profuse discharge occur during pregnancy, treatment should be instituted. Miller Martinez and Hodgdon (*THE JOURNAL*, Sept 27, 1930, p 923) favor the treatment of endocervicitis by means of cauterization during the first half of gestation even when there are no symptoms of the condition. They found erosions in 80 per cent of multiparas and in 10 per cent of primiparas. In a series of more than 2,000 cases in which the cervix was cauterized, only one abortion occurred. These authors maintain that this therapy is a prophylactic measure against puerperal sepsis rather than a contributing factor. In their series no case of sepsis occurred in women with healed cervixes, while during the same period two cases of severe sepsis occurred in cases in which the erosion was too extensive or lacerations too deep to allow successful cauterization. Temperatures were remarkably flat in contradistinction to the moderate elevations in the noncauterized group.

LEAKAGE OF FLUID DURING INJECTION OF VARICOSE VEINS

To the Editor—Recently I gave an injection of sodium salicylate for varicose veins. This was the sixth or seventh injection. It was given in the vein just below the popliteal artery and after the fluid was about half in the patient noticed a tremendous burning and stinging sensation over the middle of the lower third of the tibia right under the skin. In a day or two this became red much resembling a contusion and it became quite painful. This in a sense has healed and in a sense has not healed. The same soft contused looking type of a mass is about 3 inches above the original lesion. It seems to heal as it ascends and is constantly painful. Nothing seems to give much relief. The mass resembles more a squashed mulberry under the skin than anything else I know of. Anatomically I do not see what connection this could possibly have with the injection and I would be interested to know whether any similar condition is on record. The patient is not exactly mad about it but is disgusted and as the condition seems to heal it leaves pigmented spots which she would not mind if they were above the knees but it annoys her to have them below the knees.

LOUIS E. SHERMAN, M.D., Oakland, Calif.

ANSWER—The history of sudden burning and stinging at the time of injection means a leakage of the irritating sodium salicylate. The tissue necrosis following such leakage does not necessarily break through the skin but persists as a hard painful mass for a long time. The fact that such periphebitic patches are not at the site of injection but below it and above it means that there was a latent phlebitis and periphebitis present which became activated and now ascends in patches. The hemorrhagic exudate which follows the injection of highly irritating substances, such as sodium salicylate, absorbs with residual pigmentation. Concentration, amount of solution and constriction of the limb below and above the injection are important factors to bring about such leakage in particularly weak spots. If application of 30 per cent mercurial ointment and supportive measures do not bring relief, the excision of the entire segment by an experienced surgeon could be considered.

INDUSTRIAL HAZARD OF CHROMIC ACID

To the Editor—I am engaged in research involving electrolysis with chromic acid and am more or less exposed at times to the vapors arising from it. I am aware of the insidiousness of them and take precaution against them but I should like to know something of the physiologic and pathologic effects on the body and something of the treatment indicated. What is your opinion of sodium thiosulphate for counteracting the effects on the skin?
S. H. WILLIAMS, Creighton, Pa.

ANSWER—Industrial exposure to chromic acid chromates or bichromates may lead to the following related lesions:

1. A diffuse dermatitis usually on the hands and forearms.
2. 'Chrome holes'—single or multiple ulcerations of the skin and subcutaneous tissues ordinarily at the site of previous skin injuries.
3. Inflammation of the respiratory mucous membranes, with perforation of the nasal septum.

The diffuse dermatitis from chromium compounds is a simple chemical lesion which in the usual case tends to heal with or without treatment if exposure is not repeated. Secondary invasion by fungi may lead to a highly resistant condition.

Apparently, enough disinfectant properties of the chromium compound are retained in "chrome holes" to keep down infection, at least, frank bacterial invasion is not the rule. The inflammation of the respiratory tract may extend to the bronchioles, although it is usually limited to the nasal membranes. The septal perforation occurs at that point least supplied with blood in the area where squamous epithelium gives way to columnar. This area is in the line of the sweep of dusts and fumes taken in through inhalation.

Systemic disease from chromium is not a known result of industrial exposure. Its action is purely local. Just as little is known about the action of chromium compounds in tanning skins and hides, little is known about the state of the chromium compounds in their contact with human flesh. The action on tissues persists and spreads in spite of the usual efforts to arrest its progress. It is possible that chromic acid is changed into a chromate in the tissues and as such becomes fixed.

Those agents used in treatment are calculated to speed up reduction, with the formation of chromium hydroxide as the objective. This substance is less soluble and less irritating than the chromates. Sodium thiosulphate and ammonium polysulphide hasten reduction but, apparently, do not remove the chromium from the damaged tissues. Solutions of sodium bicarbonate, sodium citrate or potassium and sodium tritrate are stripping agents. It is stated that any one of these chemicals in weak solution, applied locally as wet dressings, tends to break down the chromium fixation in the tissues.

The spraying of mineral oil applications on mucous membranes provides a barrier, lessening the likelihood of harm from chromium fumes.

STATUS OF DICK SCARLET FEVER ANTITOXIN

To the Editor—A representative from E. R. Squibb and Sons was in my office today and made the statement that the Dick scarlet fever toxin was absolutely free from those substances which former scarlet fever toxins contained which produced damage to the heart muscles and to the kidneys. Will you kindly give me the present status of the Dick scarlet fever toxin relative to its safety as an immunizing agent against scarlet fever?
FORREST S. ETTER, M.D., Bartlesville, Okla.

ANSWER—The Dick scarlet fever toxin is regarded as a safe and efficient immunizing agent against scarlet fever. The main drawback to its use appears to be that several injections, generally not less than five, must be given before such a degree of immunity is established that the subject no longer gives a positive Dick test. The experience so far does not indicate that immunization with the toxin as practiced produces recognizable harm to the heart or the kidneys but to say that the toxin is "absolutely free" from injurious substances is of course going a little too far. Detail men should learn the value of understatement as compared with overstatement of what is known.

TREATMENT OF BONE TUBERCULOSIS

To the Editor—A man aged 30 years has had tuberculosis of the bone for the last fifteen years. It started with tuberculosis of the hip and gradually extended to the lumbar vertebrae. The active process healed though there is partial ankylosis in both regions. About five years ago he developed tuberculous arthritis of the right shoulder. (This was confirmed by guinea pig injection from the aspirated fluid of the joint.) Roentgenograms were taken at various intervals and the last one shows a progressive destructive arthritis involving the head of the humerus and the glenoid extremity of the scapula. At present there is limitation of motion and pain in the joint. A well known orthopedic surgeon advises surgical treatment by bone grafting thus producing ankylosis. Otherwise the surgeon states there may be a general spread of the disease and it may even result in pulmonary tuberculosis. Will you inform me whether or not an arthrodesis is the only treatment in this case or would complete rest of the joint in addition to physical therapy, heliotherapy and diet suffice? The patient is well nourished and otherwise well. Kindly omit name and address.
M.D. New York

ANSWER—Arthrodesis in a position of election is not the only treatment but it is the best. Complete rest of the joint in addition to heliotherapy, proper diet and hygiene may result in an ankylosis of the joint.

REMOVAL OF CORNS

To the Editor—A man aged 42 has been afflicted with recurrent corns (both soft and hard) on his small toe for three or four years. Salicylic acid locally in various combinations has proved futile. For the past eighteen months he has been treated by a chiropodist who cut the corns at periodic intervals. I would appreciate your opinion on the efficacy of the cautery (patient is not diabetic) and would welcome other suggestions. Please omit name.
M.D. New Jersey

ANSWER—The cautery is effective in removing both hard and soft corns. However, roentgen or radium therapy is preferred to the cautery.

CHILLINESS AND GOOSEFLESH BETWEEN
MENSTRUAL PERIODS

To the Editor—Kindly give me your opinion as to the cause and also suggestions for treatment of the following case. A woman aged 43 complains of extreme chilliness with waves of gooseflesh over her entire body about ten days before menstruation begins and sometimes during that period. Menstruation is otherwise normal. Do you consider these symptoms unusual? Please omit name and address.

MD Illinois

ANSWER—These symptoms are unusual and difficult to combat. It is generally believed that there is no definite effect exerted by menstruation on the body temperature. Some observers, however, hold that the temperature of the body is at its lowest midway between the menstrual periods and then gradually rises to a maximum about one or two days before the flow of blood begins. Other authorities maintain that the reverse is true. In the case cited a difference in body temperature about ten days before the onset of the menses may explain the chilliness. This difference can of course readily be detected, but even if there is a drop in temperature it may be difficult to prevent this. If there is a psychic factor in the sensations of chilliness and gooseflesh an attempt should be made to treat it.

O W LILL'S SOLUTION DENTAL

To the Editor—I have a patient who had prescribed for him by a dentist a preparation known as Lilly's Solution Dental made by the Lilly Dental Products Company of Welch W Va. The patient who used it noticed a dark discoloration of the tongue and teeth a few days after he began using it. Several days after its use was discontinued the discoloration disappeared. I will appreciate it if you will let me know what the ingredients of the solution are.

MD Roanoke Va

ANSWER—The A M A Chemical Laboratory reports that qualitative tests indicated the presence in relatively large amounts of mercury, iodide and an arsenic compound. The solution is alkaline to litmus. It is quite likely that the preparation contains potassium mercuric iodide and an arsenic compound such as "Solution of Potassium Arsenite U S P (Fowler's solution)." The product is apparently prepared by one Dr O W Lilly of Welch, W Va. It is recommended by the proprietor for Vincent's infection and all other acute, infectious ulcerative conditions of the gums and oral mucosa infected sockets and pyorrhea. It is a pity that a mixture of such potent ingredients may be dispensed under a proprietary name to the patient for pathologic conditions of the oral cavity. If a dentist or a physician desires to have his patient use a solution containing a mercury or an arsenic compound it should be prescribed according to the individual needs with full appreciation on the part of both prescriber and patient of its poisonous character.

MAILING OF LABORATORY SPECIMENS

To the Editor—After limited search I have been unable to find any information as to how to prepare for shipment different specimens for laboratory examination. Can you give me a reference where I may obtain such information? I am interested especially in (1) how to collect and prepare for shipment a specimen of spinal fluid for the complement fixation test for syphilis (2) a specimen of feces for culture for the typhoid bacillus (3) specimen of blood for culture for typhoid bacillus (4) material from the throat for examination for diphtheria (5) a blood smear for examination for malarial parasites.

— Michigan

ANSWER—In sending specimens for laboratory examination through the mail it is required that the postal clerks be not exposed to infection. To this end there has been included in the Postal Laws and Regulations section 473, specifications as to the preparation of certain specimens. These regulations have been somewhat modified in later years they may be found at any postoffice. There has been little published on this question since each laboratory has prepared mailing outfits in accordance with its own needs and the requirements of the postoffice department. The laboratory of each state health department will gladly supply additional information on request. If the specimens are to be sent by messenger instead of through the mails no special requirements are necessary.

1. Spinal fluid for the complement fixation test for syphilis can be sent in a sterile test tube enclosed in an ordinary cardboard mailing tube with a screw top. The same applies also to blood specimens for the Wassermann test.

2. Specimens of feces for culture for typhoid bacilli require a double mailing container the inside tube of tin and the outside of cardboard each with a screw top. The specimen should be mixed with glycerin or some other preservative which will not destroy the typhoid bacillus and yet will prevent the overgrowth of the colon bacillus.

3. Blood for culture for typhoid bacilli can be sent in a sterile glass test tube the same as for the Wassermann test, except that a double mailing container is required instead of a single mailing tube. In some laboratories, Kiedel tubes containing broth are used for this purpose. At any rate, the inside mailing tube must be of tin with plenty of cotton packing so that in case the glass tube is broken in transit the postal clerks will not be exposed to infection.

4. Throat cultures for examination for diphtheria, if sent on cotton swabs require the swab to be placed in a test tube and the test tube placed in a cardboard mailing tube with metal ends and screw top. If the specimen is swabbed on Loeffler's medium, this must be sent in a double mailing tube.

5. Blood smears for examination of malarial parasites can be made in the ordinary way and the microslides placed in a single cardboard mailing tube.

USE OF DIPHTHERIA TOXOID

To the Editor—Instructions coming with the preparations of diphtheria toxoid (kimon) prepared in this country suggest that it be used in children over 1 year of age and that results obtained in infants under 6 months of age are unsatisfactory. Is there any recent tabular evidence showing results obtained with toxoid in infants from 6 months to 1 year of age? As toxoid antitoxin mixtures require months to produce an active immunity and are usually not given until an infant is 6 months of age which method would give the better result—to refrain from using toxoid until the child is 1 year old and use antitoxin in cases of exposure or to use toxoid injections at the age of 6 months and attempt to develop an active immunity? If the latter what is the clinical evidence of the percentage of immunity developed?

MD Bessener MD Sheboygan Wi

ANSWER—As yet the statistics on results with toxoid in infants between 6 and 12 months of age are not sufficient to answer satisfactorily the questions asked. It should be noted that infants are relatively susceptible to diphtheria and consequently do not require urgently or as a rule to be immunized.

PARALYSIS OF SERRATUS MAGNUS

To the Editor—Can you give me information as to the nonsurgical treatment of a paralyzed serratus magnus muscle resulting in a winged scapula condition. Any citations to recent book or journal articles will also be appreciated as available references content themselves with a very poor prognosis unfavorable. Please omit name and address.

MD Ma achu etts

ANSWER—The nonsurgical treatment of a paralyzed serratus magnus muscle would be physical therapy, radiant heat, gentle massage, diathermy and the application of a brace to hold the shoulder in a backward position. The simplest splint for this purpose is the one described by R A Funston in THE JOURNAL, Sept 15 1928. Concerning references to operations, I would suggest the one by Schrock and Koenigs' operation described in Whitman's new book "A Treatise on Orthopaedic Surgery" published by Lea and Febiger, Philadelphia 1930.

RECURRENT DISLOCATION OF SHOULDER JOINT

To the Editor—A man aged 30 has a recurring subcoracoid dislocation of the right shoulder joint. Each successive dislocation has been more difficult to reduce. What prognosis may be given that an open operation on the joint will entirely correct this condition? Which operation would be the one of choice in this particular case? Have there been any new operations devised for this condition in the past three years? Please omit name.

MD

ANSWER—The prognosis in this condition is very good. The most generally accepted operation today is that designed by Henderson. This consists of a tenodesuspension from the acromion process to the head of the humerus using a piece of the peroneus longus tendon. In Henderson's last article which appeared in THE JOURNAL, Nov 29 1930 a bibliography is given.

UNTOWARD EFFECTS OF COID THIOSULPHATE

To the Editor—I have a patient to whom I have been giving gold thiosulphate 15 cc doses were given three times a week in conjunction with violet radiation. The patient is now complaining of an absolute loss of taste. I read an article in your magazine regarding this treatment for lupus vulgaris for which I have been using it and I am anxious to know whether this loss of taste is usual and if so is it a permanent condition.

A J LANGAN MD San Pedro Calif

ANSWER—Stomatitis is a rather common untoward effect of the treatment generally in association with an exanthem. A fairly extensive search of the literature failed to reveal mention of loss of taste sensation as an untoward effect. If this is due to the drug the probabilities are that in time the effect will disappear as do the other untoward actions of this agent.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALASKA Juneau March 3 1931 Sec. Dr Harry C De Vignhe, Juneau Alaska
AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Written examination in nineteen cities in the United States and Canada March 14 1931 Sec Dr Paul Titus 1015 Highland Bldg Pittsburgh Pa
CALIFORNIA Reciprocity San Francisco and Los Angeles March 18 1931 Sec Dr C B Pinkham 420 State Office Bldg Sacramento Calif
CONNECTICUT Homoeopathic New Haven March 10 1931 Sec Dr E C M Hall 82 Grand Ave New Haven Conn
MONTANA Helena April 7 1931 Sec Dr S A Cooney Power Block Helena Mont
NEW HAMPSHIRE Concord March 12 13, 1931 Sec Dr Charles Duncan Concord N H
OKLAHOMA Oklahoma City March 10 11 1931 Sec Dr J M Byrum Shawnee Okla
PUERTO RICO San Juan March 5, 1931 Sec Dr Diego Briscoechea Box 804 San Juan P R
WISCONSIN Madison March 21 1931 Basic Science Sec. Prof R A Bauer 3114 W Wisconsin Ave Milwaukee Wis

Hawaii October Examination

Dr James A Morgan, secretary of the Board of Medical Examiners of Hawaii, reports the written examination held at Honolulu, Oct 13 16 1930 The examination covered 10 subjects and included 55 questions An average of 75 per cent was required to pass Nine candidates were examined and passed The following colleges were represented

College	PASSED	Year Grad	Per Cent
Birmingham Medical College		(1910)	76.2
University of California Medical School		(1929)	82.8
University of Louisville School of Medicine		(1929)	76.6
St Louis University School of Medicine		(1929)	76
Washington University School of Medicine		(1930)	80.9
University of Pennsylvania School of Medicine		(1929)	84.6
University of Virginia Department of Medicine		(1918)	75.6
University of Toronto Faculty of Medicine		(1927)	76.7
University of St Thomas College of Medicine		(1928)	82.8

Dr Morgan also reports 2 physicians licensed by the endorsement of credentials at the same meeting The following colleges were represented

College	ENDORSEMENT OF CREDENTIALS	Year Grad	Endorsement of
Stanford University School of Medicine		(1930)	N B M Ex
University of Nebraska College of Medicine		(1928)	N B M Ex

Montana April and October Examinations

Dr S A Cooney, secretary of the Board of Medical Examiners of Montana reports the written examinations held at Helena, April 1 and 2 and Oct 7 and 8 1930 Each examination covered 10 subjects and included 50 questions An average of 75 per cent was required to pass Thirteen candidates were examined and passed The following colleges were represented

College	PASSED	Year Grad	Per Cent
Northwestern University Medical School		(1926)	85.2
Rush Medical College		(1929)	85
University of Illinois College of Medicine		(1930)	82.8
University of Maryland School of Medicine		(1917)	76.8
University of Minnesota Medical School	(1929) 514	(1930)	80.5
St Louis University School of Medicine		(1929)	77.7
Creighton University School of Medicine		(1928)	83
University of Nebraska College of Medicine		(1930)	81.8
Ohio Medical University		(1901)	76.8
Univ of Oregon Med School	(1926) 825 (1928) 861	(1929)	83.8

Dr Cooney also reports 15 physicians licensed through reciprocity with other states at the same meetings The following colleges were represented

College	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Hahnemann Medical College Chicago		(1882)	Iowa
State University of Iowa College of Medicine		(1925)	Iowa
Kansas Medical College		(1913)	Kansas
Harvard University Medical School		(1921)	Minnesota
University of Michigan Medical School		(1926)	Minnesota
University of Minnesota Medical School	(1915)	(1924)	Minnesota
Barnes Medical College		(1908)	Tennessee
Beaumont Hospital Medical College St Louis		(1897)	S Dakota
Marion Sims College of Medicine		(1899)	Utah
St Louis University School of Medicine	(1926)	(1928)	Missouri
University Medical College of Kansas City		(1908)	Kansas
Creighton University School of Medicine		(1928)	Nebraska
University of Nebraska College of Medicine		(1929)	Nebraska

Book Notices

METHODS AND PROBLEMS OF MEDICAL EDUCATION (EIGHTEENTH SERIES) Paper Pp 329, with 18 illustrations New York Rockefeller Foundation, 1930

This report consists of thirty-two articles written by men who represent leading schools of the United States, Canada, England, Wales, France, Germany, Denmark, Belgium, Yugoslavia, Argentina, India, Siam and South Africa Four of the articles are published in French, three in German and the remainder in English The report presents methods of instruction and teaching experiments with particular reference to physiology, biochemistry and physiologic chemistry and also tends to emphasize the role of the hospital and outpatient department as teaching units for undergraduate medical students The book is profusely illustrated with floor plans of the buildings described and photographs of the interiors and equipment In the foreign articles a summary is given of the history of medicine in the country, a description of the buildings, departments and equipment, an outline of departmental budgets and personnel, and detailed accounts of the curriculum The papers regarding American universities, in addition to historical data and building information, furnish comprehensive statements relative to instruction and opportunities for research Several special features in this report include methods for photographing gross pathologic specimens a description of the 'Heart Station' of the University of Michigan Hospital and one of the work and equipment of the Chevalier Jaelson Bronchoscopic Clinic, Temple University Hospital, Philadelphia The articles are all most interestingly written and the contents reveal a great deal of thought in preparation The report is unique in its scope, containing, as it does, material that is not available in general medical journals It gives one a splendid idea of comparative teaching methods here and abroad and is particularly recommended to officials of medical schools

THE EFFECT ON FOODS OF FUMIGATION WITH HYDROGEN CYANIDE By G W Monier Williams OBE, MC MA Reports on Public Health and Medical Subjects No 60 Ministry of Health Paper Price 6d Pp 32 London His Majesty's Stationery Office 1930

This covers the experience of the foods laboratory of the ministry of health and the work of others in connection with the retention of hydrogen cyanide in foodstuffs after the use of that substance for fumigation purposes While possessing no germicidal or fungicidal properties hydrogen cyanide is admirably suited to most of the requirements of an ideal fumigant for the destruction of rats moths weevils and other vermin and insects in such locations as the holds of ships It exerts no deleterious action on fabrics painted objects or metals is highly efficacious and is readily dispersed Three objections attend its use—the lack of a definite characteristic odor or other warning property its high toxicity for man and the domestic animals and its entry under some conditions into foods in amounts that may cause harm to the consumer or cause the decay of the food The amount of hydrogen cyanide constituting the threshold of danger to man cannot be fixed with definiteness As little as 10 mg per hundred grams of food is cited as a possible harmful quantity The author cites many instances of foods containing a higher amount of hydrogen cyanide than this possible minimum Dates figs honey, cocoa, bacon and sausages (all foods with a high moisture content), tested after having been aired twenty four hours after fumigation have proved to contain from 278 to 890 parts of hydrogen cyanide per million parts of air Fumigation by means of hydrogen cyanide carried out in excess of requirements particularly when used on fresh fruits or vegetables, may lead to commercial destruction or damage by interference with normal respiratory processes or by the modification of characteristic odor or tastes The dangers of hydrogen cyanide poisoning of foods stands in relation to the quantity of gas, the duration of application the moisture content of the foods the size of the particles or units of foods methods of packing and the period of ventilation after fumigation Foods treated with not more than 1 volume of hydrogen cyanide in 200 volumes of air, with subsequent exposure to the air do not usually contain more than 20 parts of the intoxicant per million of the food products

Computation of hydrogen cyanide concentrations in fumigation are usually reckoned in terms of the weight of the liquid or solid hydrogen cyanide per unit of space fumigated. This is in contrast to methods usually employed with some other liquid intoxicants (such as benzene) for which computations are based on parts of the gas formed on evaporation, having a vapor pressure equal to or under given conditions of temperature and barometric pressure. Relative toxicities are thus not always obvious in such terms as 'parts per million.'

The final estimate as to practical hazards entitled are indicated in the preliminary note by Sir George Newman, which says in part:

If the process is skillfully applied and due precautions are taken to prevent excessive absorption of gas, it would seem that no serious risk to health is likely to be involved. It must, however, be emphasized that indiscriminate treatment of food with hydrogen cyanide by inexperienced operators may be fraught with real danger to themselves and to the eventual consumer of the food.

This brochure is in excellent example of governmental research in health conservation, crying, while the interests of the commercial groups concerned and the public by frank recognition of the actuality of hazards in a much used process, and supplying limits within which safety is found to lie.

ARTIFICIAL SUNLIGHT COMBINING IRRADIATION FOR HEALTH WITH LIGHT FOR VISION. By M. Luckiesh, D.Sc., Director, Lighting Research Laboratory, Edison Lamp Works. Cloth. Price \$1.50. Pp. 254, with 73 illustrations. New York: D. Van Nostrand Company, Inc. 1928.

The director of a large industrial research laboratory has presented in this nonmathematical book an interesting and understandable thesis on the physical properties of light. It seems to be the most complete source of information on this subject now available. Concerned largely with the biologic and therapeutic values of light, the book endeavors to lay a foundation that will inaugurate a new era of dual-purpose lighting by combining radiant health-giving energy with light for vision. It contains excellent diagrams, curves and tables that present in abundance of statistics. The author's point of emphasis is the health-maintaining value of radiant energy in addition to lighting for vision. He presents this logically by devoting a chapter to the sun's beneficial effects and calling attention to the research of Nils Finson and Auguste Rollier. This is undoubtedly one of the most extensive accumulations of facts on solar radiation that has been assembled. The author pleads for an orderly standardization of units for use in light therapy. This important step should receive careful attention. The medical profession needs a dosage unit and a method to measure it for administering light therapy. A correct and scientific method of arriving at a therapeutic unit is to standardize the physical unit. Evidently Dr. Luckiesh is following one of many leads to aid science in accomplishing this purpose. He points out that the erythema basis is a sound method of approach. The paragraphs devoted to the erythema-producing, germicidal and curative properties of light are extensive. For those who are interested in ultraviolet measurement much information is presented in the chapter on measurements of ultraviolet radiation. Various ultraviolet reflectors are described; the most efficient appear to be those finished with dull black paint. At first this fact seems odd, since visible light is reflected much better by shiny surfaces such as silver, enamel and zinc oxide. If dual-purpose lighting becomes popular, revolutionary methods in the art of reflecting light must be developed. An excellent chapter on the ultraviolet transmitting mediums is compiled and the author refers freely to many investigators and their research. The curative value of long wavelength radiations is discussed in a chapter on infrared radiations. This valuable agent is important in heating body tissues and relieving pain and the author notes that infrared, or heat radiations have never been exploited as extensively as the ultraviolet. Although this book is a veiled advertisement for the General Electric S-1 Sunlamp, physicians with an investigative turn of mind and desirous of the truth will find the information surprisingly unbiased. The book fills an urgent need in the general practice of light therapy. Further scientific information is needed to warrant the extra expenditure for installing dual-purpose lighting. Future evidence may substantiate Dr. Luckiesh's propaganda in laying this foundation. It is doubted, however, that the sun will ever be seriously challenged.

LES TOIS CARDIALES DE LA DISTRIBUTION ET DU METABOLISME DE L'ALCOOL ETHYLIQUE DANS L'ORGANISME HUMAIN. Par Erik M. P. Widmark. De l'Institut de chimie medicale de l'Université de Lund. Pp. 57, with 43 illustrations. Lund: C. W. K. Gleerup. 1928.

The alcohol question has occupied the minds of men since the dawn of history. The writers of the old and the new testament were impressed with its social importance. Social aspects in our day are no less important than they were in those days, but the political aspect has overshadowed the scientific aspect, on which all sound legislation should rest. It is even more incomprehensible that those who have the necessary scientific training to evaluate properly the use and the abuse of the article have been carried away with fury created by politicians and self-appointed reformers. Because of this importance, many scientific studies have been made on the rate of alcohol in the human economy. In limited amounts it may serve as a source of energy, is not disputed even by the most rabid opponents to its social use. Its abuses are too well known. The thought behind the present study by Protes or Widmark was to throw light on the frequently observed phenomenon that different individuals show different degrees of intoxication by ingestion of the same amount of alcohol. He starts out to answer two general questions: 1. In what measure can the same amount of alcohol result in a variable concentration of alcohol in the blood and consequently in tissues sensitive to it? 2. Can the same concentration of alcohol produce a different degree of intoxication within different individuals? The pamphlet contains an account of an address delivered in April 1920 and presents the results of an attempt to evaluate each of the special factors such as weight and condition of the body and metabolism factor the concentration in the blood after ingestion and so on by a series of apparently carefully controlled experiments. The author arrives at a general formula of possible interest in forensic medicine by which the amount of alcohol ingested can be determined within reasonable limits some time after ingestion if only two known factors are at hand—body weight and concentration of the blood. The importance of this is Professor Widmark sees it is a measure of the degree of intoxication. This investigation represents an important addition to an already large literature on alcohol and may profitably be read by students of the scientific aspects of the alcohol question.

THE AFRICAN REPUBLIC OF LIBERIA AND THE LIBERIA CONGO PAST AND THE ORIGIN OF A MALE AND MATERIAL COLLECTED DURING THE HARVARD AFRICAN EXPEDITION 1926-1927. Edited by Richard I. Strong. Volumes I and II. Cloth. Price \$15 per set. Pp. 1064, with illustrations. Cambridge: Harvard University Press. 1928.

Harvard University sent an expedition into Africa in 1926 and 1927 to make a biologic and medical survey of Liberia. The expedition was under the direction of Dr. Richard I. Strong, professor of tropical medicine, with whom seven other professors and assistants were associated. A survey of diseases present in the interior of Liberia had not previously been made. In these two volumes is the story of the travels of the expedition back and forth across Liberia and reports of the diseases found that affect the inhabitants, animals and plants. There are many instructive pictures of diseases, some colored plates of microscopic observations, pictures showing the circumstances under which these people live and maps illustrating the routes the expedition followed. Aside from their value to the sciences the two volumes will entertain and instruct any one interested in distant places.

ACCIDENTES OCULARES DEL TRABAJO EN EL URUGUAY. Por el Dr. Dr. Enrique Mender. Medico Oculista del Banco de Seguro del Estado. Congreso Medico del Centenario. Seccional de Oftalmologia. Paper. Pp. 22. Montevideo: Congreso Medico del Centenario. 1910.

In Uruguay in the years 1914 to 1929 6,228 ocular injuries were recorded. Almost two thirds of these were caused by impaction of foreign bodies while contusions and burns hold second and third places. In more recent years these traumatic lesions have been more frequent and it is interesting to note that the left eye is more often affected. A satisfactory explanation of this fact is not given. The author warns against malingerers and concludes his well formulated statistical report with the suggestion that efficient prophylaxis be practiced to protect workmen.

DISEASES OF THE GENITO URINARY SYSTEM IN INFANCY AND CHILDHOOD By Henry T. Helmholtz M.D. Professor of Pediatrics University of Minnesota (The Mayo Foundation) and Samuel Amberg M.D. Associate Professor of Pediatrics, University of Minnesota (The Mayo Foundation) Supervising editor Royal Storrs Haynes Ph.D. M.D., Clinical Professor of Diseases of Children College of Physicians and Surgeons Columbia University. Volume VII. Clinical Pediatrics. Cloth. Price, \$85 per set of 21 volumes (sold only in set). Pp. 209 with 27 illustrations. New York: D. Appleton & Company 1930.

Writers who grapple with renal disease display literary heroism. The classification is becoming a matter of keener and keener controversy in light of the recent advances in blood chemistry, renal function tests and data concerning edema. When urinary disturbances such as enuresis, diagnostic considerations and the details of genito urinary involvement are added the writers of a monograph have ample reason to be daunted. The authors of this volume have simplified the subject as only authorities may. Beginning with chapters on embryology, anatomy, physiology and diagnostic methods, they proceed with urinary disorders, renal disease, pyogenic infections of the urinary tract and diseases of the kidney and bladder concluding with considerations of the anomalies and diseases of the male and female generative tracts. Where embryologic diagrams clarify the abstract, embryologic diagrams are offered. Where roentgenograms are diagnostic such reproductions are displayed. Where diets are pertinent, detailed diets are tabulated. There is an unmistakable note of rich personal experience both in the text and in the typical text cases described. This book was apparently slightly too early for experience with the urinary dyes but the omission has not proved an insurmountable handicap to the authors with their facilities and determination to diagnose. It would be inaccurate to state that volumes of information have been compressed within these few pages. There is never the impression of a hasty short cut or a view of high lights, compend fashion. Rather one appreciates that the vast literature has been painstakingly sifted so that only seasoned facts are included. Keen discrimination throws searchlights on the essential, whether the spectacular nephrosis or the garden variety of hemorrhagic nephritis. The work has the analytic, authoritative lecture note of a professor of the fundamental sciences speaking clinically.

SOZIALE KRANKHEIT UND SOZIALE GESUNDHEIT Von Dr. Viktor Weissweiler o. Professor an der Universität Heidelberg. Paper. Price 2.80 marks. Pp. 52. Berlin: Julius Springer 1930.

This pamphlet was written to clear up the relation between the physician and the individual whose working capacity is really or supposedly impaired. This is important in Germany where thirteen million working people rely on subvention furnished by public money. Six million of these must be professionally examined in order to determine the correctness and amount of their claims. The author discusses the question whether there is a system of pathologic recognition that enables the examiner to determine satisfactorily the earning faculty of the individual and he denies such a possibility. The pathologic recognition determines the nature of the disease but not the quality of the remaining health and the working capacity of the residual functions. Great stress is laid on the investigation and improvement of the mental condition of the patient. At present it is impossible to draw from the status of morbidity definite conclusions for the determination of the functional capacity of the individual concerned. It will be the task of the physicians to develop methods for the gauging of the working capabilities. As a basis for this endeavor the question of true incapability for work, the mental disposition toward labor, and the lack of occupation though the willingness to work must be considered. This pamphlet will be of great interest to everybody who has to deal with industrial compensation work.

MOTHER ALPHONSA ROSE HAWTHORNE LATHROP By James J. Walsh M.D. Ph.D. Cloth. Price \$2.25. Pp. 147 with illustrations. New York: Macmillan Company 1930.

In 1894 the younger daughter of Nathaniel Hawthorne Rose Hawthorne Lathrop located in a three room flat on the lower east side of New York in order to help the poor who were suffering from incurable cancer. She took a few patients to live in the apartment with her recurred others into her home in order to dress their lesions and visited many more in their

own homes. Such was the beginning of a work that filled the remainder of her life. This book is the story of her service. Mrs. Lathrop's hope that her work would extend to other cities is being partially realized at present with the opening in Philadelphia of a similar home. The author writes of Mother Alphonsa from knowledge gained by association with her in this work. He also includes parts of Mother Alphonsa's diary and letters. Nathaniel Hawthorne, her father, visited in this home, as did other members of that noted family. In these pages is a charming description of Nathaniel Hawthorne's early home life during the trying years before he had written anything notable. The devotion of the Hawthornes reminds one of the Brownings of England. It was natural, therefore that their daughter should devote her life to the service of others.

DIE VISCEROGRAFISCHE METHODE. MENSCHLICHE NORMALE UND PATHOLOGISCHE PHYSIOLOGIE UND PHARMAKODYNAMIE DER MOTILITÄT DES OESOPHAGUS, DES MAGENS, DES DARMS UND DER BLASE. Von D. Danielopolu. Professor der medizinischen Klinik an der Universität und Direktor des medizinisch-klinischen Institutes B im Fildertropfen-Spital in Bukarest. Paper. Price 7.20 marks. Pp. 166 with 130 illustrations. Berlin: S. Karger 1930.

This is a compilation of work published during the last ten years by the author and his collaborators. It consists of physiologic and pharmacologic experiments on normal and diseased men. In these experiments, from one to three recording balloons were passed into the esophagus, stomach, small intestine, colon or bladder. Danielopolu believes that this type of work is of great value to the clinician, but in the rather verbose discussion of the experiments he does not present much to support the statement. He feels that his experiments are of great value also in showing how different the pharmacologic reactions of the digestive tract are in man and in laboratory animals. Actually, the kymographic records show that drugs act much the same in animals and in man. The striking fact which the clinician should note is that most of the actions of drugs were fleeting. The physician, when he gives a drug, hopes to secure an action that will last several hours; Danielopolu's records show that the effect usually lasts seconds or minutes; it is often a mixture of inhibition and stimulation and this mixture varies with the dosage used. The book really constitutes a valuable and unusual contribution to the knowledge of the motor functions of the digestive tract. There is much of interest about the behavior of the esophagus, stomach and bowel. It is interesting to see that atropine and physostigmine appear to sensitize the gastric musculature so that it will react more markedly to psychic stimuli. The esophagus in cases of cardiospasm appears to contract peculiarly. Large doses of ephedrine appear to quiet the intestine for several minutes. Pilocarpine produced a temporary increase of gastric motility followed by a period of quiet. The effect of ephedrine lasted only a few seconds. Small doses of atropine seemed to increase the activity of the stomach but large ones inhibited it. The book should be studied by every one who is interested in the research side of gastroenterology.

OPERATIVE CYNECOLOGY By Harry Sturgeon Crossen M.D. F.A.C.S. Professor of Clinical Gynecology, Washington University School of Medicine and Robert James Crossen M.D. Instructor in Clinical Gynecology and Obstetrics, Washington University School of Medicine. Fourth edition. Cloth. Price \$15. Pp. 1075 with 1248 illustrations. St. Louis: C. V. Mosby Company 1930.

The present edition of this popular book which was revised with the assistance of the younger Crossen is much larger than any of the previous editions. The first edition had 677 pages and 887 illustrations. The general plan of the book is essentially the same. The new illustrations are just as instructive as the old ones and the increased space devoted to descriptions of operations is commendable. However it seems unnecessary to devote eighty pages and ninety-five illustrations to retrodisplacement of the uterus for less and less importance is being attached to uncomplicated retroversion of the uterus. Whereas the 1925 edition did not cover such important matters as anesthesia and internal surgery which may be associated with pelvic operations, the present volume contains instructive and beautifully illustrated chapters on these subjects. The detailed description and illustrations of the use of local anesthesia are especially praiseworthy. Special extensive chapters are now devoted to genital fistulas and to the urinary tract in

relation to pelvic surgery. There is also a thorough discussion of radiation therapy. The present volume, like its predecessors will undoubtedly continue to be a popular book, but \$15 is rather a high price for a single volume.

Medicolegal

A Nurse as Employee or Independent Contractor

(*Renoif v. New York Central & Co. (N. Y.) 240 N. Y. S. 710*)

A surgeon for the New York Central Railroad Company sent an injured employee of the company to a private hospital instructing the hospital to assign private nurses to the patient. It was conceded that in doing so he was acting within the scope of his authority as an agent for the railroad. The claimant was a special nurse so assigned. Her orders came from the physician who employed her on behalf of the railroad company. The company paid her through the hospital as its agent. In the course of her employment she pricked her finger, infection followed and the finger had to be amputated. From an award of compensation against the railroad company the company appealed to the Supreme Court of New York Appellate Division, Third Department.

Counsel for the insurance carrier evidently contended that a nurse like a physician is engaged in an independent calling and that neither can become the servant of another. This argument said the Supreme Court is fallacious. Ordinarily the relation of master and servant does not exist between a person engaged in the practice of a profession and a person who engages him for a limited purpose or transaction. There is no reason, however, why that relation cannot be created. Frequently lawyers, doctors and other men of skill are employed at regular salaries for definite periods. Such contracts of employment create the relation of master and servant. *Greenberg v. Jerome H. Remick & Co.*, 230 N. Y. 70, 75, 129 N. E. 211. The relation may be created by contract, either express or implied. *Brown v. St. Vincent's Hospital*, 222 App. Div. 402, 226 N. Y. S. 317. Whether or not the relation exists may be tested by the right of the employer to control or direct the work of the employee, the payment of wages and the right to hire and discharge. In the present case, it was conceded that the railroad company gave its physician authority to select employees, whose salaries the company paid. The nurse to whom compensation was awarded was so employed and paid. She was subject to the orders of the physician and could be discharged by him. She was the employee of the railroad company just the same as though she had been employed in the company's own emergency hospital. There is no difference between this case and one wherein a superintendent is authorized to employ an expert mechanic for a limited time to render some special service in repairing a locomotive. The award was accordingly affirmed.

Gonorrheal Infection of Eyes an Accident

(*McFarland v. Massachusetts Bonding & Ins. Co. (Tenn.)* 76 S. W. (2d) 159)

The plaintiff sued the defendant insurance company on a policy insuring him 'against disability resulting directly, and independently of all other causes, from bodily injuries sustained through external, violent and accidental means.' It was stipulated by the parties that an oculist whom the plaintiff consulted found gonococci in his eyes, that the plaintiff did not know the exact time and place when the gonococci entered and did not know of their presence until inflammation set in, that they entered without his knowledge or consent, that neither when inflammation set in nor at any other time was the plaintiff afflicted with gonorrhea and that until his eyes became inflamed he had never knowingly had gonococci in his body. It was further stipulated that gonococci could be introduced into the eye by rubbing with the finger or hand or with an infected cloth. In the trial court, judgment was entered for the plaintiff and the insurer appealed to the Supreme Court of Tennessee.

The insurer contended that the unexplained presence of gonococci in the plaintiff's eyes did not justify the conclusion of the trial court that the injury was the result of external violent and accidental means. Within the terms of the policy, the

insurer contended the means through which the injury is effected must be accidental, not merely the injury itself. If a condition is produced by a voluntary act which is executed as intended but results in unknown, unforeseen, unexpected and unintended consequences it is not, argued the insurer, sustained through 'accidental means,' within the terms of the policy. Under this contention, if the eye was rubbed with the finger, hand or a glove infected with gonococci without the knowledge of the insured the infection would be due to a voluntary act, executed as intended and would not be accidental. On the other hand if on the street the wind blew the gonococci into the eye so that they became impacted and embedded, the means of getting the gonococci into the eyes would be accidental and the injury therefore accidental.

The mind yields reluctantly said the Supreme Court, to the conclusion that pathogenic bacteria are autopropagules capable of acts of violence that produce, not disease but accidental injury. That conclusion however seemed to the court to be well supported by authorities cited in the opinion rendered when this case was before the court on a previous occasion. *McFarland v. Massachusetts Bonding & Ins. Co.* 157 Tenn. 254, 8 S. W. (2d) 369, 370. The contention of the insurer presents a dilemma. If it is an accident when the germ comes from space and strikes the victim, what is it when the germ crawls from the hand or an object in the hand and digs in? The Supreme Court was unable to agree with the contention of the insurer that the latter method of infection would not be an accident within the meaning of the policy. When the injury is proved and shown to have been through external and violent means and the Supreme Court citing from its previous opinion and it appears that it was not intentionally inflicted, the requirements of the policy are sufficiently met unless it appears that it was the natural result of some voluntary act of the insured.

The judgment of the court below, in favor of the insured, was affirmed.

Evidence—Statements by Patient to Physician, When Admissible.—A physician may testify as to statements made by a patient relating to the patient's condition at the time of an examination or treatment. The opinion of a physician, however, based on a history of events or circumstances as to how an injury occurred related to him by a patient is inadmissible in evidence. *Mendenhall v. Springfield Traction Co. (Mo.)* 26 S. W. (2d) 30.

Society Proceedings

COMING MEETINGS

- American Association for the Study of Gout, Kansas City, Mo. April 7-9. Dr. J. R. Yung, 670 Cherry Street, Terre Haute, Ind., Secretary.
- American Association of Anatomists, Chicago, April 2-4. Dr. George W. Corner, University of Rochester School of Medicine, Rochester, N. Y., Secretary.
- American Association of Pathologists and Bacteriologists, Cleveland, April 2-3. Dr. H. T. Karsner, 2085 Adelbert Road, Cleveland, Secy.
- American College of Physicians, Baltimore, March 23-27. Mr. E. R. Loveland, 155 South 36th Street, Philadelphia, Executive Secretary.
- American Orthopedic Association, Memphis, Tennessee, April 15-18. Dr. DeForest P. Willard, 1916 Spruce Street, Philadelphia, Secretary.
- American Pediatric Society, Edgewater Park, Mississippi, April 15-17. Dr. H. C. Carpenter, 1805 Spruce Street, Philadelphia, Secretary.
- American Physiological Society, Montreal, April 8-11. Dr. Arno B. Luckhardt, 5216 Greenwood Avenue, Chicago, Secretary.
- American Society for Experimental Pathology, Montreal, April 8-11. Dr. C. Philip Miller, Jr., University of Chicago, Department of Medicine, Chicago, Secretary.
- American Society for Pharmacology and Experimental Therapeutics, Montreal, April 8-11. Dr. E. D. Brown, University of Minnesota, Medical School, Minneapolis, Secretary.
- American Society of Biological Chemistry, Montreal, April 9-11. Dr. H. B. Lewis, University of Michigan, Medical School, Ann Arbor, Mich., Secretary.
- Federation of American Societies for Experimental Biology, Montreal, April 8-11. Dr. H. B. Lewis, University of Michigan, Medical School, Ann Arbor, Mich., Secretary.
- Louisiana State Medical Society, New Orleans, April 14-16. Dr. I. F. Talbot, 1430 Tulane Avenue, New Orleans, Secretary.
- Pacific Coast Surgical Association, Victoria, British Columbia, February 27-29. Dr. E. F. Cilestree, 384 Post Street, San Francisco, Secretary.
- Southeastern Surgical Congress, Atlanta, Ga., March 9-10. Dr. B. T. Leasley, 45 Edgewood Ave., Atlanta, Ga., Secretary.
- Tennessee State Medical Association, Knoxville, April 14-16. Dr. H. H. Shoulders, 706 Church Street, Nashville, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Issues of periodicals are kept on file for a period of five years only. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Anatomy, Philadelphia

46 355 500 (Nov. 15) 1930

Blood Formation in Cyclostomes H. E. Jordan and C. C. Speidel
Charlottesville, Va.—p. 355

Embryology of Circulation in Fishes. I. Veins of Abdominal Wall
E. M. Shearer Princeton, N. J.—p. 393

Id. II. Development of Arteries E. M. Shearer Princeton, N. J.—
p. 427

*Basophilic Cells in Posterior Lobe of Human Hypophysis A. T.
Rasmussen Minneapolis—p. 461

Sexual Cycle in Birds. Normal Regressive Changes in Testis of European Starling (*Sturnus Vulgaris*) from May to November T. H.
Bissonnette Hartford, Conn.—p. 477

Basophilic Cells in Posterior Lobe of Human Hypophysis—A histologic study of fresh normal adult human hypophyses has been made by Rasmussen for the purpose of throwing further light on the origin of the basophilic cells that invade the posterior lobe. It appears that pars intermedia cells both in the main stratum which forms the posterior wall of the cleft and in the strands and tubules which grow backward from it may become strongly basophilic and assume the general characteristics of basophilic cells of the anterior lobe. This transition does not involve an acidophilic stage. Only an occasional isolated acidophilic cell is found in the pars intermedia. This suggests that the basophilic cells are not derived from the acidophilic type, at least under certain conditions. If these basophilic cells are of the same type as the basophils found in the anterior lobe, the clear (or slightly basophilic) cells of the pars intermedia might be looked on as undeveloped cells almost exclusively of the basophilic type. While the possibility of migration of cells from the anterior lobe into the posterior lobe is not denied, it is certainly evident that abundant cells from the pars intermedia may become strongly basophilic and in some instances, at least, account for the great number of basophilic cells that invade the nervous lobe.

American J. Roentgenol. & Rad. Therapy, New York

24 605 728 (Dec.) 1930

Development of Modern Roentgen Ray Generating Apparatus W. D.
Coolidge Schenectady, N. Y.—p. 605

Symphysis Pubis in Roentgen Examination of Sacro-Iliac Joint W. E.
Chamberlain San Francisco—p. 621

Effect of Phrenectomy on Pulmonary Cavitation W. I. Werner
Pontiac, Mich. and E. J. O'Brien Detroit—p. 626

*Roentgen Diagnosis of Chronic Appendicitis H. I. Walton and S.
Weinstein Baltimore—p. 631

Roentgen Physiological Studies on Gallbladder Lipiodol and Brominol
Light on Dog A. C. Rowbridge and B. Halpert Chicago—p. 634

*Tissue Reaction to Irradiation Using Segment of Growing Mouse Tail as
Biologic Indicator. I. Methods and Chemical Reactions H. J. Bagg
and C. R. Halter New York—p. 640

*Blood Changes in Leukemias and Lymphomas and Bearing on Roentgen
Therapy R. Isaacs Ann Arbor, Mich.—p. 648

Roentgen Treatment of Metastasis to Vertebrae and Bones of Pelvis
from Carcinoma of Breast E. T. Leddy Rochester, Minn.—p. 652

*Deep Roentgen Ray Therapy of Mammary Carcinoma II. Five Year
Follow-up W. A. Evans and T. Leucutia Detroit—p. 653

Traumatic Rupture of Diaphragm C. C. I. Wheatley New Haven
Conn.—p. 670

Diverticulum of Duodenum Perforated into Pancreas C. C. I.—p. 684

Roentgen Diagnosis of Chronic Appendicitis—In a routine study made by Walton and Weinstein of 1000 consecutive gastro-intestinal examinations there was roentgen evidence of a pathologic appendix in 152 instances, or 15.2 per cent. This diagnosis was confirmed either clinically or at operation in 133 cases, or 87.5 per cent. The incidence of appendicitis was noted to be greatest between the ages of 20 and 50 years.

Tissue Reaction to Irradiation Segment of Growing Mouse Tail as Biologic Indicator—Bagg and Halter assert that a 5 to 7 mm segment of the tail of a young mouse (approximately 9 to 12 mm of tissue) can be used to advantage as a measure of the biologic effects of irradiation. The degree of the effect of irradiation may be measured in terms of disturbance of epilation, in retardation in the growth of the tail, or in the spontaneous amputation reaction.

Blood Changes in Leukemias and Lymphomas and Bearing on Roentgen Therapy—Isaacs asserts that roentgen irradiation stimulates primitive myeloblasts and lymphoblasts to rapid reproduction. Myelocytes and small lymphocytes are stimulated to finish their life history and they then die or are excreted. The latent period between the exposure to irradiation and the elimination of the leucocytes represents the period of maturation and development of the individual cells to senility. The matured cells are excreted into the gastro-intestinal tract (polymorphonuclear cells into the mouth, lymphocytes into the intestine). Very rapid excretion may result in a decrease in the number of cells in the peripheral circulation (leukopenia), giving the false impression of an aplastic bone marrow. Anemia may mean crowding out of red blood cell tissue by foreign cells or it may mean actual aplasia of the bone marrow. Anemia, then, as well as leukopenia, may not necessarily be a contraindication to roentgen therapy. As the peripheral blood count does not always give a clue to the state of the blood-forming organs, several other factors must be taken into account in considering treatment (rate of cell destruction, type of the cells, basal metabolic rate and associated symptoms and previous response to roentgen irradiation).

Roentgen Treatment of Metastasis from Carcinoma of Breast—Metastasis from carcinoma of the breast reaches the pelvic and vertebral bones, probably by a combination of aberrant and reflux spreads through the lymphatics, and is often accompanied by an inflammatory reaction of noninfectious origin. The most common symptom of such lesions is pain in the right sciatic nerve. The distribution and type of metastasis in the group studied by Leddy bore no relationship to the primary tumor. Treatment by roentgen rays by an effect on both the inflammatory and the malignant cells in the metastatic growths produces analgesia, often complete and of months' duration, and is the best method of palliating a hopeless disease.

High Voltage Roentgen Therapy of Mammary Carcinoma—Five years of experience with many cases has convinced Evans and Leucutia that roentgen therapy in its short wavelength application is of considerable aid in treatment of operable mammary carcinoma as an auxiliary to surgical procedures. Whereas, in the cases without glandular involvement the addition of irradiation does not seem noticeably to increase the five-year results above those of surgery alone assuming, of course, that all the diseased tissues were removed in the carcinomas that had already spread to the axillary or the high thoracic lymph nodes the five year results are nearly doubled. The best method of procedure is a combination of radical surgery with a thorough systematic irradiation of the entire anterior thorax, axilla and neck on the diseased side. In the inoperable or recurrent mammary carcinomas roentgen therapy produces prolongation of life if the lesion is localized to the adjacent lymph nodes or anterior thorax and alleviates the symptoms if the carcinoma is already generalized.

Archives of Internal Medicine, Chicago

46 901 1071 (Dec.) 1930

*Differentiation and Significance of Certain Ophthalmoscopic Pictures in
Hypertensive Disease A. M. Fishberg and B. S. Oppenheimer
New York—p. 901

*Does Climate Affect Human Conception Rate C. A. Mills and F. A.
Senior Cincinnati—p. 921

Vital Capacity in College Women. I. Standards for Normal Vital
Capacity in College Women A. H. Turner South Hadley, Mass.—
p. 930

Id. II. Study of Students with High and Low Vital Capacity A. H.
Turner South Hadley, Mass.—p. 938

*Thyroidectomy Following Subtotal Thyroidectomy for Exophthalmic
Goiter W. O. Thompson on Chicago A. E. Morris Boston and F. K.
Thompson Chicago—p. 946

*Neutral Red Test in Pernicious Anemia S. J. Cohen M. J. Matner
and I. Cray Brooklyn—p. 950

*Diagnostic Value of Sugar Tolerance Curve in Endocrinopathies B. A.
Glassberg St. Louis—p. 987

- *Reflex Influence of Colon, Appendix and Gallbladder on Stomach—F. M. Smith and G. H. Miller, Iowa City—p. 988.
Alkaline Tide as a Method of Studying Gastric Acidity—R. S. Hubbard, Clifton Springs, N. Y.—p. 994.
Metabolism of Obesity. VIII. Basal Metabolism and Insensible Perspiration During a Period of Reducing Weight—C. C. Wang, S. Stroufe and M. Andersch, Chicago—p. 1002.
*Origin of Urobilinogen—I. M. Rabinowitch, Montreal—p. 1014.
Correlation of Widal's Postdigestive Leukopenia as Test for Liver Function with the Normal Rhythm of the Leukocytes—M. Goodman and J. E. Connors, New York—p. 1018.
Sphenopalatine Phenomena: Present Status of Knowledge—H. Byrd and W. Byrd, Detroit—p. 1026.
Serum Treatment for Chronic Ulcerative Colitis—J. A. Birken, E. C. Kosenow and C. F. C. Irving, Rochester, Minn.—p. 1030.
Influence of Auricular Contraction on First Heart Sound and Radial Pulse—C. C. Wolcott and A. Mariotes, Philadelphia—p. 1045.

Significance of Certain Ophthalmoscopic Pictures in Hypertensive Diseases.—In 274 cases of hypertensive and renal diseases the ophthalmoscopic observations were studied by Fishberg and Oppenheimer in relation to the clinical picture. In thirty-nine of the cases, postmortem observations also were made. The concept of albuminuric retinitis includes three distinct pathogenic entities which can most often be differentiated with the ophthalmoscope: (a) arteriosclerotic retinopathy, (b) malignant hypertensive neuroretinitis and (c) choked disk due to increased intracranial tension from edema of the brain. The ophthalmoscopic characteristics of these three types of retinal changes are described and their occurrence and prognostic significance in the individual types of hypertensive disease investigated. In all of the ten cases of essential hypertension with malignant hypertensive neuroretinitis in which the patients came to necropsy, necrosis of the renal arterioles was present. On the other hand, necrosis of the renal arterioles was absent in eleven instances of essential hypertension without malignant hypertensive neuroretinitis that were studied at necropsy. Instances are described of malignant hypertensive neuroretinitis in a patient with arterial hypertension due to suprarenal tumor and of arteriosclerotic retinopathy accompanying hypertension resulting from amyloid contracted kidney.

Does Climate Affect the Human Conception Rate?—The birth statistics of different cities, states and countries were analyzed by Mills and Senior and it was found that human fertility, as indicated by the conception rate, is highest in any given population at a temperature of about 65 F. and that it is reduced during the low temperatures of the northern winter and by mean summer temperatures above 70 F. The summer depression is roughly proportional to the rise in the mean temperature above 70 F. These changes in conception rate are not dependent on changes in the marriage rate or sexual activity of the population and must therefore represent actual variations in human fertility.

Thyrotoxicosis Following Subtotal Thyroidectomy for Exophthalmic Goiter.—Of 190 cases of exophthalmic goiter in which the patients underwent subtotal thyroidectomy during the years 1923 to 1928 at the Massachusetts General Hospital and which were followed for from three months to nearly six years after operation with frequent physical examinations and tests of basal metabolism, Thompson et al. found that 37, or 19.5 per cent, showed definite clinical evidence of postoperative thyrotoxicosis with basal metabolic rates ranging from plus 19 to plus 63 per cent without medication. In only two instances was there evidence that it was a true recurrence rather than a persistence of the disease. In three cases, however, regeneration of thyroid tissue was observed in association with a persistence. The postoperative thyrotoxicosis lasted from about two to four years in the three cases in which it finally disappeared without further surgical measures or roentgen treatment. It lasted for at least one year in nineteen others and at least from four to six years in four others. The degree of thyrotoxicosis was usually not severe, with a single exception it was less than before operation. In eighteen cases the basal metabolism could be held at a constant level for from months to years by the prolonged administration of iodine. In ten cases in which iodine was ineffective or eventually became so or in which it did not abolish the thyrotoxicosis completely enough reoperation was recommended. In seven cases roentgen therapy was tried with fair results in five instances. From a preoperative standpoint there was no definite distinguishing mark between those patients who had thyrotoxicosis following

operation and those who did not. There was a rough parallelism between the amount of thyroid tissue palpable after operation and the degree of thyrotoxicosis. The surgeons who did the most radical thyroidectomies (synonymous in general with those who had the most experience) had definitely a smaller percentage of cases of postoperative thyrotoxicosis than did the surgeons who had less experience and who usually did less extensive thyroidectomies. In the cases of persistence of the disease, the authors did not note any relapse except those caused by the omission of iodine or any remissions except those caused by its administration and the disappearance of the disease.

Neutral Red Test in Pernicious Anemia.—During the past year Cohen et al. were able to demonstrate the presence of injected neutral red in the gastric extractions of three patients who had pernicious anemia. They were unable to state whether the neutral red recovered in the gastric extractions of these patients was actually secreted by the gastric glands or whether it was regurgitated from the duodenum into the stomach. The possibility that the neutral red recovered in these cases was of gastric origin cannot be excluded. A simple and rapid method for the detection of neutral red in the gastric content is described.

Diagnostic Value of Sugar Tolerance Curve in Endocrinopathies.—As the result of the analysis of 500 sugar tolerance curves plotted by the same technician, and being the same method, Glassberg feels that the sugar tolerance curve as it has been used is a routine up to this time does not yield information of any diagnostic value in the differentiation of normal and endocrinopathic conditions. Analysis of curves reported within a few days of the first routine sugar tolerance test shows no uniformity in the results, thus precluding further a diagnostic interpretation of the curve obtained. Careful determination of the capillary (arterial) and venous blood sugar after the administration of a standard dextrose meal with and without the ingestion of water shows no uniform deviation in the form of the curve. Such an analysis did show that the intake of fluid alone produced a tremendous but not a constant deviation in the curve.

Reflex Influence of Colon, Appendix and Gallbladder on Stomach.—A reflex stimulation of the stomach from the colon, appendix and gallbladder was demonstrated by Smith and Miller. This effect which was indicated by an increase in the tone, particularly of the pyloric portion, and by an increase in the depth of the peristaltic waves, was completely abolished by atropine. In this study, however, all operative procedures incident to the experiment were completed prior to the registration of the control curve and thus the possibility of an irritation from the peritoneum producing the results was eliminated. These observations on patients are in line with the experimental studies on the dog and constitute a further demonstration of the reflex connection between the colon and the stomach.

Origin of Urobilinogen.—Rabinowitch records a clinical experiment which appears to demonstrate that urobilinogen may be found in the body not only outside the intestinal tract but also in the absence of bacteria as reducing agents.

Sphenopalatine Phenomena.—The Byrds bring together the more important observations that have accumulated in the literature on the sphenopalatine ganglion during the past twenty-five years and the more important observations that have been made during eight years of original work on this subject. The original work includes more than 2,000 cases and more than 10,000 instances counting multiples and repetitions, of remote dysfunctions. Dysfunctions numbering more than three score have been relieved by anesthetization of the sphenopalatine ganglions, including afflictions as intractable as progressive deafness as painful as migraine and iritis and as grave as glaucoma and angina pectoris. Anesthetization of the sphenopalatine ganglion does not give relief in all cases or any one malady but may be confidently expected to do so in at least one fifth of all cases of the several serious afflictions mentioned, which is equal to relief in all cases of one of them. Besides this, anesthetization of the sphenopalatine ganglion gives relief in a certain percentage of cases of more than three score other dysfunctions ranging from sciatica and pruritus to chorea and hypertension. Furthermore while anesthetization of the sphenopalatine ganglion has not in itself accomplished the conquest of

any one disease it has led directly to the therapeutic mystery of hay fever, vasomotor rhinitis and polypoid degeneration. The authors believe that anesthetization of the sphenoplatine ganglion should be a routine procedure in every one of the dysfunctions enumerated, not only as a preliminary test but also a therapeutic measure in cases that show a positive reaction.

Serum Treatment for Chronic Ulcerative Colitis—Bargen et al. assert that the fasting antibody solution obtained by precipitation in ether-water of the specific immune serum of chronic ulcerative colitis adds a new and valuable reagent to the armamentarium used in the treatment for bacterial chronic ulcerative colitis. It is particularly efficacious in the treatment of the more severe, subacute cases in which ileostomy was formerly the treatment of choice. This in conjunction with the specific vaccine and other symptomatic agents, has greatly reduced the need of ileostomy. Operation, and primarily ileostomy, had become limited to complications, with very few exceptions. Fifty consecutive unselected cases received the antibody solution. All the patients are living more than a year after treatment. Twenty-four patients became free from symptoms; thirteen became from 75 to 90 per cent well, and six were improved at least 50 per cent. In only seven cases was there little if any change following the treatment. These seven cases were either severe, long-standing cases with extensive involvement of the colon and destruction, or there were serious complications, such as multiple polyps or strictures.

Archives of Surgery, Chicago

21 1059 1430 (Dec.) 1930 Part II

- Exploration of Pericardium and Decompression of Heart Cases W. Whittemore, Boston—p. 1059
*Pericardiectomy in Treatment of Pick Syndrome C. S. Beck and R. A. Griswold Cleveland—p. 1064
*Anterolateral Costectomy for Inadequate Collapse Following Posterior Extrapleural Thoracoplasty C. A. Hedblom Chicago—p. 1114
*Unfavorable Results of Phrenicectomy F. B. Berry New York—p. 1125
Mechanics of Collapse Therapy: Indications. Seven Hundred Cases E. J. O'Brien Detroit—p. 1134
Amebic Hepatic Subphrenic and Pulmonary Abscesses S. W. Harrington, Rochester, Minn.—p. 1146
*Treatment for Penetrating Wounds of Pleural Cavity D. S. Allen St. Louis—p. 1161
*Etiology of Primary Bronchiectasis D. T. Smith Ry. Brook N. Y.—p. 1175
Changes in Pulmonary Circulation Induced by Experimentally Produced Arteriovenous Fistula J. H. Gibbon Jr. and E. D. Churchill Boston—p. 1188
Obstructive Pulmonary Atelectasis: Pathogenesis and Clinical Management C. M. Van Allen Peiping China and G. E. Lindskog New Haven Conn.—p. 1195
Alveolar Gas Exchanges and Atelectasis: Mechanism of Gas Absorption in Bronchial Obstruction P. N. Corjillos and G. L. Burnham New York—p. 1214
*Air in Peritoneal Cavity: Effect on Position and Activity of Diaphragm R. H. Overholt Philadelphia—p. 1282
*Esophagus, Stomach and Heart Following Unilateral Phrenicectomy H. C. Ballou H. M. Wilson J. J. Singer and E. A. Graham St. Louis—p. 1291
Idiopathic Dilatation of Esophagus: Three Cases F. A. C. Scrimgeur Montreal—p. 1315
Hydrated Cysts of Lung E. W. Phillips Rochester N. Y.—p. 1324
Giant Sarcoma of Pleura: Two Cases H. Likenthal New York—p. 1329
Intrathoracic Tumors: Fifteen Cases T. C. Davis Atlanta Ga.—p. 1395
Removal of Metastatic Carcinoma of Lung and Mediastinum F. Tordella New York—p. 1416

Pericardiectomy in Treatment of Pick Syndrome—A method for the production of this disorder experimentally is described by Beck and Griswold. It consists of the application of surgical solution of chlorinated soda in the pericardial cavity. The introduction of this solution results in generalized intra-pericardial adhesions, thickening and fibrosis of the parietal pericardium and sometimes of the epicardium, with fluid in the chest enlargement of the liver together with a fibrinous exudate on the liver, and sometimes pulmonary and subcutaneous edema. Observations on the experimental production of the Pick syndrome and its relief by pericardiectomy are presented. Observations on a clinical case of the Pick syndrome and its relief by pericardiectomy are given. A new exposure for the resection of the pericardium is presented.

Anterolateral Costectomy for Inadequate Collapse Following Posterior Extrapleural Thoracoplasty—During the last four years Hedblom has performed this secondary

anterolateral costectomy in twenty-six cases. The indications were persistent symptoms after the posterior thoracoplasty in eight cases, and recurrence of symptoms after a symptom-free period of four months in one and of ten months in another. There was an average grade of collapse of the thoracic wall from the posterior resection in all these cases. In three, regeneration of the ribs in the course of a multiple stage operation prevented a satisfactory anatomic degree of collapse, and symptoms persisted in all. In two there were large unobliterated pulmonary cavities and persistent pneumothorax cavities. In eleven there were unobliterated empyema cavities secondary to active pulmonary tuberculosis. The parietal pleura overlying a residual cavity was resected later in all of these cases, with complete healing. In all these cases the anterolateral resection was tolerated as well as or better than the posterior resection. There was one death attributable to the operation from sepsis and one death from hemorrhage.

Unfavorable Results of Phrenicectomy—Berry points out that there is a definite risk associated with crushing, resection or avulsion of the phrenic nerve. Fifty-seven cases have been reviewed in which phrenicectomy was most detrimental; twenty-six of the patients died as a result of the operation. These poor results have all been subsequent to properly performed operations without technical error. In view of the fact that there is such widespread advocacy of phrenicectomy as a harmless procedure in cases of pulmonary tuberculosis, bronchiectasis and even abscess of the lungs, Berry deems it wise to sound a word of caution and to call attention to the risk involved, slight though it is.

Treatment for Penetrating Wounds of Pleural Cavity

—Of the 162 cases reported by Allen 47 were stab wounds and 115 gunshot wounds of the chest. Seven of the cases of stab wound proved fatal, but the cause of death was associated stab wounds of the abdomen in five cases and immediate hemorrhage from the heart in two cases. No patient died of injury to the lung. Hemothorax occurred in forty-two of the forty-seven cases. Two patients were operated on for ligation of the intercostal artery. The pleural cavity was not explored in either of these cases. In the 115 cases of gunshot wounds of the chest, only five patients died when the pleural cavity only was entered by the bullet. Two of these died immediately of hemorrhage, and three died later as a result of infection of the pleural cavity and injured lung. A total of 27 of the 115 patients died. Twenty-two of these cases were complicated by associated wounds of the abdomen, spinal cord and skull. It is evident that patients with ordinary bullet wounds of the chest usually survive unless there are associated wounds that cause death. One of these patients died from associated injury of the left ventricle. This was correctly diagnosed and the mediastinum was immediately explored. The apex of the heart was found to have been shattered by the bullet to such an extent that it was impossible to check the hemorrhage. Bullets were removed from twenty-one of the 115 patients with gunshot wounds. In fifteen cases the bullets were embedded in the wall of the chest and could be removed without disturbance of the lung. In six cases the bullets were removed from the lung but in no instance before two weeks had elapsed after the injury.

Etiology of Primary Bronchiectasis—Smith states that the essential lesion in primary bronchiectasis is a local necrosis of the elastic tissue in the bronchial wall due to infection with the fusospirochetal group of anaerobic organisms. This fusospirochetal group comprising *Treponema macrodentium*, *Treponema microdentium*, *Spirochaeta vincenti*, *Spirochaeta buccalis*, fusiform bacilli, vibrios and cocci are the same organisms that are found in pyorrhea alveolaris, Vincent's angina, pulmonary abscess and pulmonary gangrene. These organisms have been seen in the sputum of forty-nine of sixty patients proved to have bronchiectasis by the iodized oil test. Spirochetes and fusiform bacilli were found in sections of bronchial dilatations after staining by Levaditi's method in eight or twelve cases that came to necropsy. Fusiform bacilli were demonstrated in pathologic sections from four of an additional six cases of bronchiectasis after staining by Goodpasture's method. In animal experiments, fusospirochetal material from varied sources (pyorrhea alveolaris, fusospirochetal bronchitis and pulmonary abscess) caused bronchiectasis as well as pulmonary abscess and pulmonary

gangrene in rabbits. Control inoculations with pure cultures of (1) *Staphylococcus aureus*, (2) aerobic hemolytic streptococci, (3) anaerobic hemolytic streptococci, (4) green producing streptococci, (5) anaerobic streptothrix, (6) Friedländer's bacilli and (7) influenza bacilli failed to produce damage to the bronchi. The fusospirochetal group of organisms is probably the cause of primary bronchiectasis.

Air in Peritoneal Cavity—The position and mobility of the diaphragm were studied by Overholt in animals under sodium amylethyl barbituric acid anesthesia. It was observed that following the introduction of air into the peritoneal cavity, either by injection or as a result of laparotomy, the diaphragm assumed a higher position and its excursions were definitely restricted.

Esophagus, Stomach and Heart Following Unilateral Phrenicectomy—Twenty seven patients were examined by Brillou et al. before and after phrenicectomy performed for pulmonary disease. Five patients complained of the following symptoms after phrenicectomy: one of eructations of gas, another of heart burn, a third of vomiting and two of dysphagia. In all but one instance these complaints were temporary. With but one exception they followed left sided phrenicectomy. A case of cardiospasm that apparently followed phrenicectomy is recorded. No marked mechanical displacement or shift of the upper third of the intrathoracic portion of the esophagus was noted after phrenicectomy. Slight respiratory deflection of the lowermost intrathoracic portion of the esophagus was noted. The electrocardiogram showed no marked changes following phrenicectomy. Four patients showed changes in the height of the complexes but not in their shape. Two followed left sided and two followed right sided phrenicectomy.

California and Western Medicine, San Francisco

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- County Medical Society Business Organization L. C. Kinney San Diego—p. 849
Angina and Other Precordial Pain Differentiation E. S. Kilgore San Francisco—p. 853
*Glucose per Rectum Evidence of Nonabsorbability B. Smith Los Angeles—p. 857
*Obstruction Following Gastro-Enterostomy Mechanical Factors F. R. Fairchild Woodland—p. 860
Uroselectan Reactions Accompanying Its Application G. W. Hartman San Francisco—p. 867
California State Mental Hygiene Survey G. Myers Los Angeles—p. 872
Treatment of Bone Tumors E. I. Bartlett San Francisco—p. 877
Differentiation Between Yaws and Syphilis B. C. N. O'Reilly San Francisco—p. 881
*Treatment of Barbitol Poisoning with Glucose C. H. Sanderson Stockton—p. 887
Cerebral Symptoms in Hypertension W. H. Barrow San Diego—p. 887

Dextrose by Rectum—Evidence of Nonabsorbability

—The administration of dextrose by rectum is a common therapeutic procedure, especially as a part of postoperative treatment and when oral feeding is difficult or impossible. The dextrose is usually given by the drip method or, at a faster rate, in the form of nutrient enemata. An isotonic solution of the sugar is usually given by drip, but with the dextrose enema the concentration of the sugar is often much higher. Little thought has been given to the effectiveness of such therapy, whatever has been the technique used or strength of dextrose solution injected. Smith asserts that the evidence that even a small part of the injected dextrose is absorbed is still inconclusive, whether an isotonic or hypertonic solution is used, since the reported increases in blood sugar and respiratory quotient are too slight to be definite proof of additional dextrose intake. Experimental data show that the blood sugar can be decreased by the instillation of dextrose in any strength of solution into the lower bowel. It is possible to bring about a degree of hyperglycemia in this way in the more sensitive patient that would be sufficient to lower both blood pressure and blood volume or disturb the acid-base balance similar to that seen in overdosage of insulin in diabetes with a sharp shift to an alkalosis. Such circulatory disturbance, without an associated chemical imbalance may complicate and prolong postoperative convalescence.

Obstruction Following Gastro-Enterostomy—Fairchild presents a brief review of the steps in the evolution of gastro-enterostomy with the observation that postoperative obstruction has not been uniformly eliminated by any procedure. He asks whether the failure always to avoid postoperative mechanical

obstruction may not be due to the application of a too nearly standardized technique to all individuals without giving consideration to their great variations in anatomic structure. He stresses the fact that, before operation, the relative positions of the structures concerned in a gastro-enterostomy are not fixed. After operation they are fixed and, unless the mechanics of the situation are so worked out that they will be fixed in a relatively normal position without stress or angulation, dysfunction will result. Suggestions are made as to the modifications necessary in the length of the afferent loop, the position of the opening in the transverse mesocolon and the position and character of the stoma made necessary by the anatomic variations of individual to secure a relatively normal relation of the structures after operation.

Treatment of Barbitol Poisoning with Dextrose—Sanderson reports a case in which the administration of dextrose intravenously saved the patient's life. A man took forty tablets (200 grains or 13 Gm.) of barbitol with suicidal intent, at 3 p. m., September 1. He was deeply comatose and unable to swallow, his face was flushed, there was deep, stertorous breathing and he could not be roused by any means. Reflexes were present, but there was almost no voluntary muscular movement. At 7:30 p. m. his stomach was washed out, and epsom salt was instilled. Strong coffee was given both rectally and by mouth several times as well as other stimulants but without effect. Large involuntary bowel movements and involuntary urination occurred several times. Despite treatment, the patient became progressively worse. At 8 p. m., September 2 he was cyanotic, the pupils were dilated, the temperature was 102.6, the pulse was 150, and respirations numbered 64. He appeared about to die. Light hundred cubic centimeters of 20 per cent dextrose was given intravenously. An hour later the patient had a chill and became restless, moving about for the first time since entry. This condition continued throughout the night. At 6 a. m. the patient began talking incoherently and for the first time could swallow. The following day, September 4 he was semiconscious but confused. September 5 he was improved, and September 6 was quite rational.

Canadian Public Health Journal, Toronto

21 553 634 (Dec.) 1930

- State Health Insurance Movement in British Columbia J. W. McIntosh Vancouver—p. 554
Public Health Services in Alberta M. R. Bow Alberta—p. 590
Health and Sickness Insurance in Saskatchewan F. C. Middleton Saskatchewan—p. 601
Public Medical Services in Manitoba F. W. Jackson Manitoba—p. 608

Colorado Medicine, Denver

28 1 52 (Jan.) 1931

- Recent Accomplishment and Future Prospect in Tuberculosis Research L. R. Long Chicago—p. 5
Public Education for Tuberculosis Prevention H. E. Kleinschmidt New York—p. 16
Importance of Animal Inoculation with and Culture of Sputum Microscopically Negative for Tubercle Bacilli I. D. Bronfin and L. T. Brick Denver—p. 19
Childhood Tuberculosis Review J. J. Waring Denver—p. 23
Prevention and Treatment of Laryngeal Tuberculosis F. R. Spencer Boulder—p. 29

Maine Medical Journal, Portland

21 209 230 (Dec.) 1930

- Cancer Statistics in Maine and United States W. L. Holt Augusta—p. 212
Angina Pectoris and Acute Coronary Occlusion T. J. Burrage Portland—p. 219
Malignant Hypertension E. R. Blaisdell Portland—p. 222

Minnesota Medicine, St. Paul

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- Spinal Anesthesia with Reduced Dosage of Spinocain A. Schwyzer St. Paul—p. 855
Practical Value of Examination of Blood Smears C. H. Watkins and T. J. Heck Rochester—p. 860
Treatment of Pernicious Anemia with Gastric Tissue of Swine H. M. Conner Rochester—p. 865
Intravenous Administration of Sodium Amytal for Alleviation of Pain During Labor Forty Six Cases J. J. Swenson St. Paul—p. 868
*Use of Sodium Amytal in Nervous Disorders L. R. Gowan Duluth—p. 874
Problem of Disease of Paranasal Sinuses H. I. Lillie Rochester—p. 877
Palsy of Cranial Nerves L. H. Ziegler Rochester—p. 880

- Encephalitis W H Hengstler and C N Rubberg St Paul—p 888
Significance of Temporary Blindness W L Benedict Rochester—p 891
Circulatory Tests Previous to Amputation W T Peyton Minneapolis—p 896
Recurrent Lymphangitis W H Coe Rochester—p 902
Leg Lengthening for Shortening Due to Infantile Paralysis W H Cole St Paul—p 904
Intestinal Foreign Bodies Removal by Appendectomy or Body Posture Change T H Stangl St Cloud—p 909
Ureteral Stone with Perireteral Extravasation A N Collins and C Clement Duluth—p 910

Sodium Amytal for Alleviation of Pain During Labor—Swendson asserts that when the dosage and intervals are individualized, the intravenous administration of sodium amytal during the latter half of the first stage and during the second stage of normal labor induces satisfactory amnesia in nine out of ten cases. Labor is rarely, if ever prolonged by its use and may sometimes be hastened. There is no evidence of harm to the mothers. Slight to extreme restlessness results from its administration in half of the patients and is an objectionable feature of the procedure. Restlessness can be controlled toward the end of the second stage and delivery facilitated by the use of an inhalation anesthetic of which lesser amounts than usual need be administered. One third of the babies are somewhat apneic at birth apparently because of a torpidity of the respiratory center induced by the drug and require stimulation to establish respiration. No other deleterious effects of the drug are observed in the postnatal behavior or weight changes of the babies.

Sodium Amytal in Nervous Disorders—Gowin has used this drug in the various types of cases that one encounters in the usual psychiatric practice. He has used it to a large extent, for its sleep-producing action. He found it a most excellent drug in controlling convulsions when given intravenously. He has also used it in four cases of idiopathic epilepsy. These cases have been observed over a period of from three to four months. The average dose has been from $1\frac{1}{2}$ to 3 grains (0.1 to 0.2 Gm) two or three times a day. These patients were all previously given phenobarbital. In two cases there was no perceptible change in the frequency or severity of the convulsions. In one case the convulsions were more severe and more frequent than when phenobarbital was given and in one case the patient reported longer intervals between convulsions and some improvement in his general feeling of well being. However these cases have not been observed over a sufficient length of time to draw definite conclusions as to its value in epilepsy. As a daytime sedative in psychoneurotic cases it has been Gowin's observation that the drug unless given in very small doses has too great a soporific action and if given in small doses its action is very transient. As a soporific in psychoneurotic cases and also in psychotic cases attended by marked excitement and depression with severe insomnia when given in carefully adjusted doses, it is a real aid in obtaining sufficient restful sleep with a minimal degree of depressant action.

Nebraska State Medical Journal, Norfolk

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- Country Doctor Looks at Female Complaint A E Hertzler Halstead Kan—p 1
Coronary Thrombosis C W Covey Lincoln—p 4
Vinot Murphy Treatment in Types of Anemia Other Than Pernicious Anemia A E Levine Omaha—p 9
Management of Uterine Cervix (Carcinoma Excluded) R Lukert Omaha—p 16
Cotter No 1 A C Brown Omaha—p 21
Ameloblastoma C M Hau en Malm and I Start North Platte—p 27
Achlorhydria as Etiologic Factor in Vitiligo Four Cases H W Francis Bancroft—p 27
Paleopathology I B Young Fremont—p 26

Oklahoma State Medical Assn Journal, Muskogee

23 3 224 (Dec) 1930

- Medical Aspects of Dental Hypertrophia and Caries in Children W A Taylor Oklahoma City—p 33
Use of Ispidal Extract of Corpus Luteum in Infants M B Chittman Okmulgee—p 35
Meningococcal Meningitis C H Carrington Oklahoma City—p 32
Rural Medical Economic Situation E P Vetch Okene—p 37
Surgical Treatment of Pulmonary Tuberculosis D S Allen Stillwater—p 400
Effect of Some Drugs on Blood Pressure I A Tulley and H A Shoemaker Oklahoma City—p 41
Rational Treatment of Carcinoma of Cervix Uteri W Long Oklahoma City—p 406

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British J of Actinotherapy & Physiotherapy, London

5 199 222 (Jan) 1931

- Diathermy and Other Electrical Agents in Infantile Paralysis H Bordier—p 201
Indirect Surgical Diathermy W J Turrell—p 204
Treatment of Common Painful Conditions by Diathermy J Cowan—p 205
Diathermy in Gynecology J Wilson—p 207
Treatment of Rheumatoid Arthritis by Combined General and Intra-pelvic Diathermy P Bauwens—p 209
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Physical Basis of Diathermy Treatment B D H Watters—p 213
Use of Static Current: Rationale and Indications T H Humphris—p 214

British Journal Experimental Pathology, London

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- Meloidosis: Dissociation of Bacillus Whitmore L Nicholls—p 593
*Iodine Content of Blood of Patients Suffering from Cancer F S Fowweather—p 400
Determination of Bilirubin by Diazo Reagents C Hunter—p 407
*Two Types of Bilirubin Diazo Reaction in Serum: Hypothesis on Nature of Bilirubin in Serum from Hemolytic Jaundice C Hunter—p 415
*Influence of Intravenous Injection of Urea on Exchange of Substances Between Blood and Tissues H Donovan and O Brenner—p 419
Intra Ocular Pressure and Drainage of Aqueous Humor W S Duke Elder—p 418
Blood Pigment in Obstructive Jaundice: van den Bergh Reaction W J Griffiths and C Kave—p 441
Normal Flocculating and Granulating O Agglutinins for Bacillus Typhosus in Serums of Different Species W A Timmerman—p 447
*Response of Cram Fed Pigeons to Substances Effective in Pernicious Anemia J M Vaughan G L Muller and I Zetzel—p 456
Virulence of Hemolytic Streptococci: II Influence of Oxygen on Maintenance of Virulence in Broth Cultures E W Todd—p 469
Id III Influence of Oxygen on Restoration of Virulence to Attenuated Cultures E W Todd—p 480
Tuberculin Sensitivity in Rats H Schutze and S S Zilva—p 469
Method for Karyoporesis of Biologic Materials F C Smith and J Marrack—p 492
Diphtheria Toxin Antitoxin Floccules F C Smith and J Marrack—p 494
Virus of Psittacosis S P Bedson and G T Western—p 502
Concentration of Protective Substance in Antipoliomyelitis Serum W T J Morgau and R W Fairbrother—p 512

Iodine Content of Blood of Patients Suffering from Cancer—The results of Fowweather's investigation show that there is no uniform reduction of the blood iodine in cases of cancer. Out of twenty four cases examined only eleven show values below what may be considered as normal. This failure to find a constant association between low blood iodine and cancer is said to be definite evidence against the view that iodine deficiency is a cause of cancer. While there may perhaps be a tendency toward lowered blood iodine in cancer there is at least as much justification for assuming that the reduction is the result of the cancerous condition as there is for assuming it to be the cause of such a condition. Further since in rather less than half of the cases examined there was reduction of blood iodine indicated the determination of blood iodine as a diagnostic test for the presence of malignant disease can have no value whatever.

Two Types of Bilirubin Diazo-Reaction in Serum—An attempt has been made by Hunter to determine the probable nature of the two kinds of diazo reaction for bilirubin obtainable in icteric serums. The so called direct reaction is said to be most probably due to the presence of sodium hydrogen bilirubinate and the so-called delayed reaction to the presence of free bilirubin in an undetermined solvent that is soluble in alcohol.

Influence of Intravenous Injection of Urea—The results of the intravenous injection of 5 Gm of urea in health and in various diseases were investigated by Donovan and Brenner. At the time the urea has mixed with the blood (three minutes) 80 per cent has left the blood stream. It is suggested that the urea leaves the blood by a process of simple diffusion passing into the water of the cells as well as into the free water and that the process is complete in fifteen minutes when the concentration of urea in the blood equals that in the tissues. A review of the literature indicates that urea is unique in this respect. With no other substance investigated is the distribution uniform over blood and tissues and in most the concentration in some tissues is greater than in the blood showing that the

process by which the substance enters the tissues is not one of simple diffusion alone. It is suggested that the sudden introduction of urea into the body delays the formation of urea and may even bring it to a standstill for the first two hours after the injection. The importance of this in connection with the production of uremia is mentioned. Evidence is discussed in favor of the view that except in edematous patients urea injection causes some salt to pass out of the body fluids to be stored in a dry form in the salt depots of the body, thus reducing the crystalloid concentration of the body fluids which had been raised by the injection of urea, but that in most cases of edema salt is liberated from the depots and enters the body fluids. It is pointed out that the capillaries are completely permeable to water and to most of the substances dissolved in the blood plasma and are partly permeable to the plasma proteins. The factors retaining the blood inside the vessels are discussed. None of the causes ordinarily mentioned seem sufficient. It seems probable that the true cause must be sought in the tissues rather than in the blood or blood vessels. It is suggested that perhaps the amount of fluid leaving the blood is limited by the capacity of the tissues for taking up water and that this in its turn may be influenced by changes in the acid base balance or by alterations in the relative proportions of various ions. A review of the literature shows that in experimental edema usually less fluid passes into the tissues after intravenous injection, than in nonedematous animals, suggesting that an important factor in the production of edema is a deficient power of the tissues to hold and bind water which therefore accumulates in the tissue spaces as edema fluid. The authors' results suggest that in edema the tissues are also less able to bind salt, which accumulates also in the free tissue fluids.

Response of Grain-Fed Pigeons to Substances Effective in Pernicious Anemia.—Experiments dealing with the administration of substances effective in pernicious anemia and other test material to grain fed pigeons are described by Vaughan et al. The oral or intravenous administration of liver preparations effective in anemia produced a consistent pronounced response of the reticulocytes, and one preparation and two subfractions prepared from it which had received no clinical tests also caused a similar response. Beef steak was as effective as potent liver preparations in causing a rise of the reticulocytes. No reticulocyte response was obtained to (1) a liver preparation which was inert for pernicious anemia, (2) a liver extract in which the active principle had been destroyed, (3) vitamin B₁ and B (4) histamine, (5) sodium chloride and (6) casein. An isolated observation suggests that sepsis interferes with the action of a potent liver preparation in pigeons as it does in pernicious anemia. Substances capable of influencing the reticulocyte level are without effect on the total red blood cell count. The grain fed pigeon may perhaps suffer from a mild dietary deficiency, which is possibly a factor of importance in permitting its bone marrow to respond to certain substances.

British Medical Journal, London

1 43 80 (Jan 10) 1931

Outlook on Tuberculosis Changing Orientation R Philip—p 43
Plea for Earlier Diagnosis of Abdominal Emergencies C H Tagge—p 50

Removal of Portions of Malignant Tumors of Rectum for Confirmatory Section W B Gabriel—p 52

*Method of Exciting Incipient Movement in Weakened and Paralyzed Muscles A E Porritt and O F G Smith—p 54

Safe Method of Dealing with Ethmoiditis E A Peters—p 56

Treatment of Frigipelas by Poentgen Rays Three Cases R H Jameson and F Hermann Johnson—p 57

Method of Exciting Incipient Movement in Paralyzed Muscles.—The methods described here by Porritt and Smith aim at eliminating all checks to the activity of the weakened muscles by counterbalancing the weight of the limb inducing a relaxation of the opponent muscles, and finally counteracting almost entirely inertia, friction and gravity. This allows the feeble minimal efforts of the affected muscles to act not in the stationary limb but in association with pendulum movements, maintained by the operator at first and later by the patient. The apparatus necessary for this purpose is an overhead bar with ball-bearing pulleys through which run adjustable ropes and slings. By this means the faintest return of power is allowed free play, the activity of the muscle contributes to its

more rapid recovery and the patient, persuaded by the wide range of movement into thinking that he is accomplishing more than is actually the case, is encouraged to exert every effort without the usual fear of pain, thereby hastening restoration to normal function.

Lancet, London

1 160 (Jan 3) 1931

*Uterine Hemorrhage Malignant Disease B Whitehouse—p 1

Surgical Trauma and Convalescence J B Hume—p 1

*Vaccination and Pathogenicity Experiments with BCG G Dreyer and R J Vollum—p 2

Electrocardiographic Changes During Brief Attacks of Angina Pectoris—Origin of Anginal Pain J Parkinson and D F Peaford—p 15

Postinfluenza Acute Parenchymatous Keratitis J H Dörzart—p 19

*Liver Preparations in Diabetes P C Brett W A Broom and F O Howitt—p 20

Estimation of Protein in Urine P M T Kerridge—p 21

Spontaneous Pneumothorax G B Page—p 22

Uterine Hemorrhage Malignant Disease.—One form of uterine bleeding, emphasized by Whitehouse as being a most important perhaps the most important, diagnostic sign is cancer of the uterus, namely the hemorrhage that occurs as a direct result of coitus. Continued hemorrhage must always be regarded with the greatest suspicion. It is true that a blood stained discharge or in some cases slight actual hemorrhage some times follows coitus, when the cervix is the seat of an extensive erosion and ectropion or when a simple polypus is projecting through the os externum. A severe bleeding associated with coitus is however nearly always evidence that cervical carcinoma exists and a careful examination of the cervical tissues is demanded. In 1929 4,428 women died in England and Wales from malignant disease of the uterus, a mortality rate of 215 per million females.

Mutation and Pathogenicity Experiments with BCG.—The pathogenic properties of two strains of BCG have been investigated by Dreyer and Vollum. Deep bouillon subcultures of BCG (1) produced generalized tuberculosis in all of twenty-eight guinea pigs inoculated intraperitoneally with doses of from 0.1 to 20 mg, and produced severe progressive tuberculous lesions in all of twelve rabbits inoculated intravenously with doses of from 5 to 50 mg. Twenty-two of twenty-three guinea pigs infected either directly with tuberculous material from these animals or with cultures from the tuberculous material developed generalized tuberculosis. *Bacillus tuberculosis* was found in cultures from the heart blood of all of the twenty-eight guinea pigs injected directly with deep cultures of BCG (1), and in nineteen of the twenty-three guinea pigs infected with pathologic material or cultures obtained from the animals originally infected with culture. The pathogenicity of BCG 359 was tested on guinea pigs. One of twenty guinea pigs injected with the culture is recovered from the Pasteur Institute died from an unknown cause 672 days after an intraperitoneal dose of 5 mg having caseous tuberculous lesions without signs of healing in the right testis and the left epididymis. Deep bouillon subcultures of this strain were tested on fifty-six guinea-pigs, twelve of them receiving doses of 10 mg intraperitoneally, of these twelve three that were killed and two that died had definite progressive tuberculous lesions and four of the five had caseous abscesses in the testes or epididymides.

Electrocardiographic Changes During Brief Attacks of Angina Pectoris.—In five cases Parkinson and Bedford were able to obtain electrocardiograms during and after short paroxysms of anginal pain. These showed that the ventricular deflections were modified during the paroxysm of pain and that the modifications disappeared with the pain. In none of these cases was there any question of coronary thrombosis at the time the records were taken though one patient had probably had coronary thrombosis three months previously. In all these five patients electrocardiograms taken during short anginal paroxysms showed definite and transitory changes in the ventricular deflections. There was a depression of R T and a diminution in the amplitude or inversion of the T waves in one or more leads changes closely resembling though not so pronounced as those which follow cardiac infarction in the early stages. It is significant that both transient anginal pain and cardiac infarction can affect the electrocardiogram in a similar manner and it seems reasonable to infer that the mechanism underlying this electrocardiographic change is essen-

tally the same in the two cases—in ischemia of a part of the cardiac muscle

Liver Preparations in Diabetes—Brett et al have carried out Blotner and Murphy's directions for the preparation of their special extract of liver on several occasions and have consistently found that the extract was quite ineffective in lowering the blood sugar of normal rabbits when administered in suspension by stomach tube in doses equivalent to one tenth pound of liver, a quantity which, according to Blotner and Murphy, is equivalent to about 1 unit of insulin. In the authors' experience an injection of 1 unit of insulin produces a considerable fall in blood sugar in the type of rabbits usually employed for insulin assay. Extracts were prepared from both fresh and frozen liver by the Blotner and Murphy process and extraction periods of both twelve and forty eight hours were tried but in no case was any hypoglycemic effect observed. Liver extract (Boots) prepared by the Medical Research Council's process was also found to have no hypoglycemic action. In fact in practically all cases a slight but definite hyperglycemia resulted.

Estimation of Protein in Urine—In the method described by Kerridge, the urine is mixed with a carbon suspension and carbon and protein are simultaneously precipitated with trichloroacetic acid. The grayness of the precipitate depends on the amount of protein, when the amount of carbon is constant. The tone is compared with standards.

South Africa M Assn Journal, Cape Town

4 745 776 (Dec 27) 1930

- Herd Injuries and Their Features W. Weikman—p 747
Oral Disease in Relation to Larynx, Nose, Throat and Eye M. S. Lewin—p 754
Three Cases of Cesarean Section for Different Conditions J. A. Lloyd—p 756
Inflammatory Lesions of Organs in Female Pelvis: Origin, Stages and Treatment F. K. Te Water—p 758
Case of Full Term Ectopic Pregnancy A. S. Wilson—p 761

Annales de l'Institut Pasteur, Paris

45 525 672 (Nov) 1930

- *Preventive Antituberculosis Vaccination of Nuislings with BCC in Foreign Countries: Effects on General Infant Mortality A. Calmette—p 525
Hemorrhagic Lesions Caused by *Clostridium Aerogenes* Capsulatum M. Weinberg and N. Combesco—p 547
Absorption by Mouth of Paratubercle Bacilli in Guinea Pig and Rabbit P. Delis—p 581
*Preventive Vaccination of Human Beings Against Undulant Fever C. Dubois and N. Sollier—p 596
Relations Between Growth of Anaerobic Microorganisms and Potential of Culture Medium H. Plotz and J. Celoso—p 61
Campaign Against Malaria in Cochinchina H. C. S. Morin—p 641
Transplantation of Human Cancer in Chimpanzee J. Trochu—p 660

Vaccination of Nuislings with BCG in Foreign Countries: Effects on General Infant Mortality—The results of an extensive investigation of the effects of vaccination of nuislings with BCG were reported at the Seventh Conference of the International Union Against Tuberculosis held in Oslo in August 1930. Calmette says that the absolute innocuousness of the vaccine was again confirmed by bacteriologists from many nations. No basis was found for the recent claims that certain strains of BCG, namely type S (smooth), could be isolated which would produce progressive tuberculous lesions; the investigators were unable to isolate such strains themselves and their examination of cultures furnished them of type R (rough) and type S showed that both had been contaminated by other virulent bacteria. Reports from all the countries of Europe except Austria, Great Britain and Portugal and from Argentina, Brazil, Canada, Chile, the Belgian Congo, Cuba, the United States of America, Japan, Maurice Island and Uruguay showed that systematic vaccination of nuislings with BCG had produced a marked decrease in the general mortality from all causes among nuislings. It was noted moreover that the mortality during the first month of life before the effects of the vaccination have time to be manifested remains approximately the same among vaccinated and nonvaccinated infants. This seems an additional reason for attributing the decreased number of deaths during the first year to the effects of vaccination with BCG. The general mortality was diminished by about 20 per cent by the vaccination while deaths from tuberculous infection were practically eliminated. Since the deaths

from tuberculosis have never been more than a very small proportion of the total number, it is logical to assume that vaccination with BCG increases the infant's resistance not only to tuberculosis but to other infections as well.

Vaccination of Human Beings Against Undulant Fever—Human beings develop undulant fever through either accidental or professional contact with sheep, goats or cattle with melitococcosis. Because of the great extent of the disease among animals and the impossibility of avoiding contact with infected animals or of knowing which ones are infected, the only satisfactory prophylaxis for all persons living in a region where melitococcosis has developed and having any contact with animals is preventive vaccination. Dubois and Sollier report that among 111 persons vaccinated, all of whom were directly exposed to infection there were no cases of undulant fever. On the other hand among thirty six persons who were not vaccinated, about 75 per cent of whom had no direct contact with infected animals, two cases of fever developed. Since the vaccinations took place within from three to eight months previous to the time of writing the authors have no data as to the duration of the immunity produced. They describe in detail the preparation of the vaccine used which is a combination of strains of *Brucella melitensis* and *Brucella abortus* from both animals and human beings. They also give definite instructions for the administration of the vaccine. No harmful results have been produced by the vaccination.

Revue de Chirurgie, Paris

68 225 317 (Nov) 1930

- Dislocations of Pelvis Rouviellois, Mussonnet and Salmer—p 225
Influence of Cetrization Neuromas of Sectioned Nerves on Circulation of Blood R. Fontaine and F. Orban—p 285
*Combination of Splenic and Renal Rupture R. Desjacques, T. Barard and H. Lathuraz Viollet—p 296

Combination of Splenic and Renal Rupture—Although the combination of splenic and renal rupture is not found frequently Desjacques et al feel that it is of sufficiently frequent occurrence to deserve a careful study. The lesions observed in the spleen are always serious while the associated renal lesions may or may not be important. The authors attribute this to the fact that minor lesions of the spleen do not produce definite symptoms and are usually never detected. The ruptures are usually caused by a severe traumatism. Shock symptoms are almost always observed immediately afterward followed by signs of internal hemorrhage and by more or less violent spontaneous pain in the region of the left flank. Although the entire abdomen may be painful a more distinct pain produced by palpation in the left flank is a significant symptom. Contraction of the abdominal wall near the spleen is often present; the authors consider it probably the most specific of all the symptoms. If the kidney is involved in the lesions hematuria and a lumbar hematoma are usually present. The evolution in such cases is always fatal unless intervention is practiced immediately; death occurs in from two hours to three days. Surgical treatment is the only possible remedy; the medical treatments used being merely palliative and supplementary. Since local anesthesia does not permit a thorough examination of the abdominal cavity and spinal anesthesia is dangerous for patients in a weakened condition the use of general anesthesia is recommended. Since the symptoms often do not justify a precise diagnosis an exploratory laparotomy should be made with a median or supraumbilical or a subumbilical incision depending on the case. The authors describe several operations for the treatment of lesions in different localizations. They particularly emphasize the necessity for early recognition of the symptoms and prompt intervention.

Revue de Medecine, Paris

17 710 1 (Nov) 1930

- Tetiform Solar Crises in Course of Gastric and Duodenal Ulcers C. J. Udaondo, M. M. Calmette and C. I. Goulet—p 19
Diarrheas of Hepatic Origin C. F. J. Desjardins and H. Deleury—p 4
Ga Tro Enterolesy in 1929 J. Kachet—p 6

Tetiform Gastric Crises in Course of Gastroduodenal Ulcers—Udaondo et al show that in the course of gastric and duodenal ulcer painful attacks often occur that resemble the gastric symptoms of tabe. In fact the resemblance is so marked that it often leads to an incorrect dia-

nosis of tabetic conditions. However, it is always possible to eliminate tribes by a clinical examination that reveals the absence of the neuropathic and humoral characteristics of this disease. Moreover, analysis of the gastric and duodenal secretions, the existence of latent hemorrhages, when they are present and roentgen examination make an accurate diagnosis possible. Various theories as to the pathogenesis of the tabetic-form crises have been proposed. The two explanations considered most sound by the authors are that neuritic lesions induce solar neuritis and that pancreatic sclerosis by a mechanical action produce the same symptoms. The authors recommend, in general the use of the same medical treatment as in ordinary ulcerous conditions, for instance the administration of anti-spasmodics such as papaverine, atropine and belladonna. However, if medical treatment does not bring relief and certainly if one suspects the existence of a pancreatitis that seems likely to develop further surgical intervention is indicated. The authors do not venture to prescribe the operation of choice; they suggest that in this condition the case should be turned over to a good surgeon who should be able to solve the problem on the basis of the previously obtained diagnostic and clinical data.

Giornale di Clinica Medica, Parma

11 1121 1164 (Nov. 20) 1930

Endocrinal Hemorrhages Due to Trauma G. Benassi—p. 1121

*Local Tuberculinic Allergy in Pulmonary Tuberculosis C. Borsellino—p. 1134

Latent Acidity of Urine in Hepatic Cirrhosis G. Donini—p. 1147

Local Tuberculinic Allergy in Pulmonary Tuberculosis—Borsellino applied to about 100 patients with pulmonary tuberculosis skin tests with tuberculin at various points of the two hemithoraces, starting with the conception that the skin reaction to tuberculin is not the expression of a humoral action but the result of the skin changed in its trophism due to tuberculous toxins. The results as shown in figures and roentgenograms reveal positive skin reactions to tuberculin in one hemithorax and negative reactions in the other hemithorax. Furthermore, in one and the same hemithorax positive reactions were obtained in various points and negative reactions at other points. In correspondence with the diseased organ the positive reactions indicated lesions of a productive nature and the negative reactions lesions of an evolutive nature. Hence, the system of skin tests with tuberculin would localize the various areas of the lungs where tuberculous foci exist, thus furnishing a criterion of the state of evolution.

Polislinico, Rome

37 1665 1700 (Nov. 17) 1930 Practical Section

*Insulin Therapy in Emaciation Following Calculous Cholecystitis D. Ceccarelli—p. 1665

Tumors of Kidney P. Emiliotti—p. 1672

Insulin Therapy in Emaciation Following Calculous Cholecystitis—Ceccarelli, after a short survey on insulin treatment in emaciation states in general, reports a case of marked emaciation (loss of weight 20 Kg) following cholelithiasis, in which insulin (20 units per day in two doses) was administered. The surprising outcome (gain in weight of 17.8 Kg), with a return of general conditions almost to normal, induces the author to advise insulin treatment in such emaciation states.

Archivos Argentinos de Pediatria, Buenos Aires

1 437-512 (Oct.) 1930 Partial Index

*Achondroplasia in Two Brothers F. de la Torre and G. Allende—p. 440

Achondroplasia in Two Brothers—De la Torre and Allende report two cases of marled achondroplasia in brothers, aged 20 and 6 months, respectively. The children (sons of first cousins) were mentally and physically normal except for the achondroplasia. The oldest child had the typical symptomatology of the abnormality. The youngest besides the marked achondroplasia had a dorsolumbar kyphosis which at the roentgen examination appeared like a kyphosis caused by rickets. Both children presented marked dwarfism for their ages. Neither the parents nor the children had syphilis. The parents were of a height above normal. The father was almost a giant.

He had however slightly noticeable achondroplastic hand. The authors consider the father as an atypical achondroplastic person. Several theories on the pathogenesis of achondroplasia are reviewed. The authors state that, in their case, congenitality was responsible for the condition of the children. They based their statement on the following fact: The father had three normal children from his first wife. This fact, the authors believe, points out that his union to a person to whom he was not related caused the disappearance of a possible familial predisposition for the inheritance of a condition which the father exhibited in an atypical form. On the contrary, the union with his second wife (his blood relation) accentuated that propensity, according to the laws of atavism which probably existed in both him and his wife as a familial stigma, resulting in the complete development of a typical form of the condition.

Jahrbuch fur Kinderheilkunde, Berlin

129 253 374 (Nov.) 1930

*Colitoxin Composition B. P. B. Plantenga—p. 253

Peptone Shock Potassium and Calcium Contents of Blood Serum.

F. Schiff H. Flusberg, and A. Mazzeo—p. 266

Symmetrical Necrosis of Skin in Scarlet Fever Case G. Fedders—p. 270

Effect of Ingestion of Vitamins on Chemical Composition of Mothers' Milk I. Greiner and J. Mosonyi—p. 282

Diphtheria Mortality Cause and Prevention T. Szirmay—p. 293

Acidity of Gastric Juice in Healthy New Born Infants and in Nursing Infants—p. 319

Genesis of Diaphyseal Foci in Bones of Nurslings with Congenital Syphilis H. Schonfeld—p. 325

Whooping Cough Vaccine Treatment P. Leitner—p. 343

Talara Ara Reaction of Cerebrospinal Fluid in Meningitis M. Ka shara and M. Komishu—p. 350

Colitoxin Composition—Plantenga describes experiments on guinea pigs in which he demonstrated that the substance that he had previously proved to be the etiologic factor for the syndrome of alimentary intoxication and had designated as colitoxin is a compound one. It is composed in part of a substance bound to the colon bacillus and in part of a substance eliminated by the colon bacillus during its growth apparently in aggression. Both the coli endotoxin and the coli aggrassin are, when acting alone, nontoxic. The coli aggrassin, however, inhibits the phagocytic action of the leukocytes so that the dead colon bacilli and the endotoxin bound to them cannot be rendered harmless and the endotoxin exerts its toxic action. As a result syndromes appear that are essentially of purely bacterial origin and result in the clinical picture of intestinal catarrh. This condition is not an 'alimentary intoxication' (Finkelstein) but a colitoxicosis.

Effect of Ingestion of Vitamins on Chemical Composition of Mother's Milk—Greiner and Mosonyi studied the effect of an increased ingestion of vitamins A and B by nursing mothers on the chemical composition of their milk, at the same time note was taken of the increase in weight of the nurslings and their reaction to intercurrent diseases. As a result of the increased ingestion of vitamins the fat content of the milk increased in 41.2 per cent of the women remained normal in 31.6 per cent and dropped below normal in 31.6 per cent. In 33 per cent of the cases a slight increase in the ash content of the milk was demonstrated. The amounts of the other constituents of the milk remained normal. The nurslings of the women to whom the vitamins had been administered showed a 15 per cent greater increase in weight and a greater resistance to intercurrent diseases than did the nurslings of the women to whom the vitamins had not been administered.

Genesis of Diaphyseal Foci in Bones of Nurslings with Congenital Syphilis—Schonfeld reports a case of multiple foci of degeneration in the diaphysis of the long bones of an infant with congenital syphilis. Because of band shaped shadows of great density and approximately parallel to the epiphyseal lines he believes that the foci of degeneration in the diaphysis of the bones were not the result of primary osteitic or osteomyelitic syphilitic processes but of osteochondritis.

Whooping Cough Vaccine Treatment—According to Leitner vaccine treatment represents a great advance in the crusade against whooping cough. It should be begun early on the basis of a diagnosis made by means of a leukocyte count. The injections should be given subcutaneously or intramuscularly at intervals of from twenty-four to forty-eight hours.

Large doses of a concentrated vaccine give the best results. If the desired action is not obtained the injections should be continued until from six to eight have been given. In advanced cases of whooping cough the duration of the disease cannot be shortened by means of vaccine treatment but the paroxysms can be rendered less severe.

Takata-Ara Reaction of Cerebrospinal Fluid in Meningitis.—On the basis of a study of the reaction in thirty cases of tuberculous meningitis and twenty cases of suppurative meningitis, Kasahara and Komishi state that the Takata-Ara reaction in the cerebrospinal fluid is not specific for meningitis. In tuberculous and suppurative meningitis the cerebrospinal fluid shows not only the rose-red Takata-Ara reaction but also other color reactions and the flocculation reaction. The fact that the pathologic cerebrospinal fluid shows a color reaction or a flocculation reaction depends on changes in the albumin globulin ratio. The Takata-Ara reaction of the cerebrospinal fluid is modified by previous ingestion of salts of bromine and iodine.

Mitteilungen a d Grenzgeb d Med u Chir, Jena

42 1142 (Nov 13) 1930

- *Thyroidectomy in Malacia of Trachea. M. Sgalitzer—p. 1
- *Acute Articular Rheumatism. Disturbances in Peripheral Nervous System. F. Granström and F. Harrisomenowa—p. 17
- Errors of Technique in Operations on Stomach. H. Biesenberger and W. F. von Wieser—p. 29
- Postoperative Jejunal Ulcer. Etiology. C. Hertel—p. 57
- Vermiform Appendix. Motor Mechanism. Resorption and Pathology. K. Westphal—p. 99
- Violetole Poisoning. Morphologic and Chemical Changes. H. Tammann—p. 125

Thyroidectomy in Malacia of Trachea.—According to Sgalitzer, malacia of the cartilaginous framework of the trachea is one of the most dangerous complications of goiter. As a result of prolonged pressure atrophy parts of the cartilaginous framework may disappear completely. The trachea may then collapse under the pressure of the constricting goiter and produce severe asphyxia or even death. The condition occurs not only in old persons who have had a goiter for many years but also in young persons. The tracheal cartilages of youths up to the eighteenth year seem even more susceptible to pressure atrophy than do the tracheal cartilages of adults and may undergo a marked loss of resistance after only a few years. In twenty-six persons with benign goiter seven cases of severe malacia of the wall of the trachea were noted together with nineteen cases of definitely decreased resistance of the cartilaginous framework of the trachea. In all of the seven cases of severe malacia of the trachea, surgical removal of the goiter gave excellent end-results. The changes in the position of the trachea and the severe stenosis that was usually present were corrected in a short time. The return to normal was complete after four months. After this time there remained in four cases only a slight depression in the wall of the trachea. In two cases the lumen of the trachea was of the normal width and in one case there was a large concentric sacculation of the lumen of the trachea in the region of the malacia. The restoration of the lumen of the trachea was favored by the cicatricial retraction of the soft parts of the operative wound. Although the malacia persisted all seven patients were completely relieved of symptoms.

Acute Articular Rheumatism. Disturbances in Peripheral Nervous System.—Granström and Harrisomenowa state that not only do changes in the peripheral nervous system occur in acute articular rheumatism and other joint diseases but also the same zones of increased and of decreased cutaneous sensibility, paresthesias, irradiation of the pain to neighboring regions and painfulness of the nerve trunks occur in parietal and osteomyelitis as well as in fractures of bone and that these changes appear and disappear with the disease of the joints and bones. In some cases there occur also changes in the tendon reflexes. Zones of decreased and of increased cutaneous sensibility in the region of diseased joints occur frequently in acute articular rheumatism and like Herd's zones indicate a reflex modification of the cutaneous sensibility. Frequently the hyperesthetic and hyperesthetic zones occur close together. The zones usually have the shape of an irregular armband surrounding the joint and never extend beyond a region innervated by one nerve. The

disturbances in the peripheral nervous system that occur in articular rheumatism are not caused by degenerative changes in the nerves or in their branches but represent reflex phenomena of irritation. A review of the few cases of neuritis and polyneuritis of so called rheumatic nature reported in the literature revealed that in almost all the cases the dependence of the neuritis on rheumatism had not been demonstrated conclusively. The great rarity of typical neuritis or polyneuritis in articular rheumatism shows that the rheumatic virus has scarcely any affinity for the peripheral nervous system. The authors believe, therefore, that there is no basis for designating the neuritis or polyneuritis that appears after exposure to cold as rheumatic, the condition should be termed a refrigeration neuritis or a neuritis caused by an unknown infection.

Münchener medizinische Wochenschrift, Munich

77 1959 1998 (Nov 14) 1930

- *Clinical Experiences in Serology of Tuberculosis. F. O. Horing—p. 1959
- *Relation of Dyestuff Excretion to Secretion and Morphology of Diseased Stomach. N. Henning and R. Jurgens—p. 1961
- *Diagnosis of Latent Thrombosis. Von Hagen—p. 1963
- Pregnancy Toxoses and Reversed Eck's Fistula. W. Orloff—p. 1964
- Five Years of Sepsis Therapy with Serovaccine. G. Mayer—p. 1965
- Chemotherapy in Streptococcal Infections. R. Hilgermann—p. 1970

Clinical Experiences in Serology of Tuberculosis.

Horing reports experiences with the complement fixation reaction in patients with tuberculosis. He points out that specific antibodies do not circulate in the blood during all stages of tuberculosis and therefore their demonstration is possible in only a part of the cases. The reaction can be positive only in those cases in which there exists not only a local, or a cell allergy but also a humoral allergy. It is also probable that in existing allergy numerous types of antibodies may be present, and only a part of them will react to one antigen (extract). For this reason it is advisable that several antigens be used. In patients with active tuberculosis it was found that during the early stages of the disease the complement fixation reaction was frequently negative. In the further course of the disease it was often observed that the reaction became positive. In order to be completely informed about the allergic conditions the author performed besides the blood test also Pirquet's skin reaction. The two reactions gave different results in many cases. Especially during the early stage when the complement fixation reaction was negative, the Pirquet skin reaction was strongly positive. When the complement fixation test was repeated on the day following the Pirquet test about one half of the patients gave positive reactions in the sense of a provocation of the serum allergy. The author comes to the conclusion that in many cases the complement fixation reaction is a valuable diagnostic aid however the negative reaction is often deceiving. The reaction is of no especial value for the detection of tuberculosis in patients who have not been thoroughly examined.

Relation of Dyestuff Excretion to Secretion and Morphology of Diseased Stomach.

Because the gastric mucous membrane is capable of excreting dyestuffs following their intramuscular injection Henning and Jurgens tested the excretion of neutral red in 161 persons. Some of these persons were healthy and the others had gastric disturbance. Nearly all of them had first had a gastroscopic examination. The method of the neutral red test was as follows. In contradistinction to most experimenters who inject the dye intravenously the authors injected it intravenously. This had the effect that the excretion period was considerably shortened. After the fractional withdrawal of the gastric juice had been completed 5 cc of a 1 per cent sterilized solution of the dye was injected intravenously. By continuous withdrawal of the gastric contents by means of a retention catheter the first appearance of the dyestuff in the stomach was detected. It was found that in patients with atrophy of the gastric mucous membrane and in cases of gastritis with complete achylia there was no excretion of dyestuff through the stomach. In a few cases of erythritic gastritis the dyestuff appeared very late in the stomach. In the various forms of atrophic gastritis either normal or retarded excretion was noted. In subacidity in normal acidity and in hyperacidity the excretion showed no difference. In twenty-four healthy persons with normal acidity or with hyper-

acidity the same average excretion period was observed as in patients with the various organic disorders of the stomach. From this it may be concluded that the excretion of the dye in the stomach is independent of the secretion type, as long as the hydrochloric acid secretion is maintained. In three cases of histamine refractory functional achylia with normal mucous membrane normal excretion periods were observed. This seems to indicate that the excretory function of the gland cells cannot be inhibited by psychic influences.

Diagnosis of Latent Thrombosis—Von Hagen reports the case of a woman aged 35 who had undergone hysterectomy on account of uterine myomas. The postoperative course was normal. However on the fourth day the patient felt a severe pain in the right shoulder. This pain persisted for about four days. On the thirteenth day after the operation the patient showed for the first time an increased temperature and three hours later she died. The author thinks that the pain in the shoulder indicated a pulmonary embolism which was caused by a thrombosis in a pelvic vein. The pain which is a warning signal the patient should not have been allowed to be up but should have been kept in bed and treated with morphine. The author is aware that the concurrence of latent thrombosis and Herd's zone is not a daily occurrence. However, if, following an operation or in the course of a prolonged bed rest a Herd's zone appears it may be assumed that somewhere a thrombosis exists which has caused a silent embolism in the viscera corresponding to the area of cutaneous painfulness, and preventive measures should be taken.

Zentralblatt für Gynäkologie, Leipzig

51 247 2850 (Nov. 4) 1930

- Morphology and Clinical Aspects of Intraplaccental Hematoma H. Fuchs—p. 2818
- Lymphogranulomatosis of Female Genitalia H. Lewinski—p. 2821
- Intravenous Administration of Tribrom Ethanol for Anesthesia in Gynecologic Interventions G. Nicmann—p. 2826
- *Is Maniolo's Seroreaction for Pregnancy Practical? M. Rodcutt and C. Jernikoff—p. 2830
- Criticism of Uteral Methods of Cure of Umbilical Stump A. I. Scherbak—p. 2831
- *Foreign Bodies Left in Abdominal Cavity During Operations Experiments with Contrast Gauze I. Grunstein—p. 2839
- Repeated Belated Separation of Placenta H. Lehmann—p. 2844

Is Maniolo's Seroreaction for Pregnancy Practical?—Rodcutt and Jernikoff report that, in an attempt to substitute for the biologic method of Zondei-Aschheim a chemical test for the detection of the hypophyseal hormone in the urine, Rodcutt made experiments with numerous reagents without finding an entirely satisfactory test. Then Maniolo described a simple seroreaction for the diagnosis of pregnancy, with which he obtained correct results in from 92 to 96 per cent of the cases. To 0.3 cc of fresh, clear serum he adds 1 cc of a 2 per cent aqueous solution of theobromine sodiosulphate, shakes the mixture and then adds a drop of a 0.2 per cent alcoholic solution of Nile blue and again stirs the mixture. After from several minutes to an hour the mixture decolorizes and appears yellow or pinkish yellow if the serum is from a pregnant patient. However, if the woman is not pregnant the serum mixture is blue, bluish or pinkish blue. The authors investigated the reliability of this reaction by testing the serums of pregnant and of non-pregnant women seventy-five in all. But in spite of a careful technique their results were unsatisfactory. The color nuances varied considerably and a clear differentiation between positive and negative reactions was impossible.

Foreign Bodies Left in Abdomen During Operations
Experiments with Contrast Gauze—Grunstein points out that during operations foreign bodies are occasionally left behind. In case of clamps rings or other metal objects a detection by means of roentgen rays is possible. But small gauze pledgets that are most frequently overlooked cannot be detected with the roentgen apparatus. Various methods have been recommended to prevent gauze compresses from being left behind or, if they have been overlooked to make them detectable by roentgen rays, namely attaching a metal ring or a bronze wire or a leaden weight to each compress. However, all these procedures have their disadvantages. Grün had the idea to prepare a special gauze for use in operations. Threads impregnated with thorium hydroxide, are woven into the gauze. These threads produce a

shadow in the roentgenogram, especially when they are massed together as is the case in a compress. This so-called contrast gauze may be washed, sterilized, soaked with iodoform or other substances, or returned for a time in a body cavity, without losing the quality of being impermeable for roentgen rays. It has no irritative effects.

Norsk Magasin for Lægevidenskapen, Oslo

51 1155 1295 (Nov.) 1930

- Slight but Fatal Traumatic Hemorrhage of Brain So-Called Duret Lesions. Medicolegal Study O. Berner—p. 1155
- *Human Ovarian Tumor with Virilizing Effect on Bearers O. Berner—p. 1177
- Incidence of Goiter and Occurrence of Iodine in Vestestranden in Sogn I. Iversen C. Lund and K. Wulffert—p. 1190
- Kidney and Uter Calculi F. Hjort—p. 1203
- *Venereal Granuloma I. Hval—p. 1223
- Subacute Inguinal Lymphogranulomatosis E. Hval—p. 1229
- Primary Tuberculosis of Skin C. Guldberg—p. 1235

Case of "Testicular Tubular Adenoma of Ovary"—Including Popoff's case, Berner's makes the sixth case of testicular tubular adenoma of the ovary reported in the literature. As in the cited cases of Pick, Schickel, Neumann and Strassmann the testicular portion of the tumor is sharply defined from the ovarian and of the same yellow color as the testis parenchyma and the smaller ovarian portion of the tumor rests almost like a hood on the testicular portion. The signs of hermaphroditism in this instance gradually disappeared after excision of the ovary. He is inclined to ascribe the testicular part of the tubular adenoma to a shifting in the person's chemical milieu (Goldschmidt).

Incidence of Goiter and Occurrence of Iodine in Vestestranden in Sogn—Iversen et al. found an iodine elimination in twenty-four hours of from 154 to 345 γ in the urine of men in this isolated Norwegian village of 500 inhabitants of whom about 70 per cent have goiter. The iodine concentration in the urine varied between 11 and 35 γ per hundred cubic centimeters. Earlier investigations in the goiter district of Sandvåg revealed an average iodine elimination of from 29 to 87 γ in twenty-four hours. In the goiter free district of Vik in Sogn the average was 173 γ in twenty-four hours. The iodine content of the water in Vestestranden is neither remarkably high nor remarkably low. Samples of the soil gave iodine values of between 4 and 80 γ per hundred grams. The diet consists mainly of meat and potatoes with a little salt fish. The drinking water is poor. The cause of the goiter in the region is to date unknown.

Venereal Granuloma—In Hval's patient, a sailor previously treated in several places for secondary syphilis there was the typical picture of venereal granuloma. Microscopic examination of the granulation tissue revealed partly in the large mononuclear cells partly in groups outside the cells the Donovan bodies characteristic of this disease. Infection had occurred in South America. Venereal granuloma has not before been observed in Norway.

Subacute Inguinal Lymphogranulomatosis—In the four cases reported, microscopic examination of the lymph nodes disclosed a granulation tissue with abundant cells. There were numerous small, irregularly defined abscesses, often with central necrosis. The micro abscesses were surrounded by a border of epithelioid cells with occasional cells with two or three nuclei and also occasional Langhans giant cells. The abscesses presented a polymorphic picture. Hval says that diagnosis cannot be based on the microscopic changes alone. He considers Wilhelm Frei's intracutaneous antigen reaction of great value in the diagnosis. This reaction was positive in the four cases.

Primary Tuberculosis of Skin—In Guldberg's patient, a boy aged 13, of a healthy family there were continued granulation and suppuration in one of three wounds on the knuckles of the left hand following a trauma. A lymphadenitis developed in four or five weeks in the left forearm and two weeks later in the left axilla and gradually took on the picture of a tuberculous lymphadenitis with formation of fistula. Tubercle bacilli were demonstrated in the wound and in the abscesses of the lymph nodes. Clinical and roentgen examination of the lungs showed no signs of tuberculosis. The Pirquet test was positive three months after the occurrence of the wound. The case is considered as primary tuberculosis of the skin with regional lymphadenitis.

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THE PRESENT CONSIDERATION AND CARE OF THE COLON*

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It is my purpose in this contribution to call attention more specifically to those functional disturbances of the large bowel which are frequently the cause of considerable concern to the patient and annoyance to the attending physician. It is not my purpose, on the other hand, to discuss chronic ulcerative colitis. That condition is at present receiving intensive study, especially in the bacteriologic laboratory, and a voluminous, controversial literature is about the only definite result as yet.

Among the functional disturbances of the bowels are certain irregularities due to an atonic condition at times or, again, to a spastic condition of the colon. With these disturbances of motility there are also secondary disturbances, and these together may gradually develop a mild irritative condition of the mucous membrane with a production of stringy mucus, ordinarily called mucous colitis, and attributed to a neurogenic origin. There may gradually develop a more or less catarrhal condition with a production of flakes or clumps and strings of mucus containing innumerable leukocytes. Others of these functional disturbances are dilatation and sagging of certain portions of the colon, due either to congenital defects or to developmental changes. On account of the attempt at a compensatory restoration of function, extraperitoneal folds are formed. Also on account of continual traumatic insult there may develop weblike adhesions.

With all these disturbances which may take place in or about the colon the patient almost invariably develops a certain degree of invalidism characterized by psychic and neurotic symptoms. Other symptoms more constant and probably more significant are irregularity of the bowels, such as constipation and occasionally diarrhea, an accumulation of gas in the abdomen, producing an annoying borborygmus, irritation and soreness in the course of the colon and an occasional pain and bearing down sensation especially in the lower part of the abdomen. The pain may be very severe especially before there is a stool usually consisting mostly of mucus. The pain may occur suddenly and be cramplike in character mimicking acute appendicitis, gallstone attacks, renal colic or duodenal ulcer.

Such misleading symptoms demand careful consideration as occasionally unnecessary operative procedure is undertaken. The patient gradually develops a food

phobia and subjects himself to an unnecessarily rigid diet. This leads to loss of weight which in turn aggravates the original condition, forming a so-called vicious circle. It is not unusual for the patient to become bedfast.

The problems which such a case presents are numerous. Not the least among these is that of a differential diagnosis. The case study must be complete. It is an unfortunate mistake to proceed with a long course of treatment—and it usually is a long one—on the assumption that the condition is only an intestinal neurosis, and find later that a serious organic lesion has been overlooked, but it is even more unfortunate to take up surgical intervention with no organic lesion warranting an operation. The chief concern, therefore in the consideration and care of the colon is that the diagnosis will represent the real condition present and will suggest the course of treatment. There is probably no diagnostic procedure more helpful in determining the true condition of the colon than the roentgen examination. It shows the position of the colon and whether it is free or fixed. With the judicious use of belladonna or some of its derivatives, and by repeated gastro-intestinal series and barium enemas, the roentgenogram reveals, among other things, the abnormally spastic or atonic colon and excludes organic changes.

Before undertaking the treatment of these patients with chronic disturbance of the colon, one should obtain a certain concept of the state of the nervous system. This is accomplished largely through a painstaking, careful history. Also the disturbances of the secretory activities of the alimentary tract should be known. Such information as is obtained from gastric analysis, duodenal drainage and examinations of the stools is helpful. It is desirable to make all these studies in a definite and concise order before the treatment is planned. Uncertainty on the part of the physician will soon lead to an unfortunate psychologic reaction on the part of the patient. Every effort should be made to overcome anxiety and nervous strain. The diet should be nutritious so as to maintain a normal, or somewhat higher than normal body weight for a time. The diet should not be bulky, coarse and irritative when the case is first undertaken. In the early stage of the treatment it is well to puree the vegetables and stew the fruits. Abundance of fat in the way of butter, cream and olive oil should be given. Irritating cathartics should be avoided; they are not necessary if fats and fluids are given in sufficient quantities. If medication is necessary, on account of constipation, it should be determined largely by the degree of spasticity of the bowels and the acid content of the gastric juice. Constipation with a spastic bowel and a high gastric acidity yields more readily to an alkaline laxative, such as magnesium oxide with the addition of belladonna or its

* Read before the Section on Gastro-Enterology and Proctology at the Eighty First Annual Session of the American Medical Association, Detroit, June 25, 1930.

derivatives, whereas the atonic bowel with low gastric acidity will yield more readily to bitter laxatives, such as the cascara preparations with the addition of nuxvomica and its derivatives. As the symptoms of the irritable colon disappear the diet should be changed by allowing more roughage and a more even balance of carbohydrates and fats. This will usually control the irregularity of the bowels that gives such concern. Frequently patients with an irritable or a sluggish colon will resort to large and repeated enemas.

It is unfortunate for these patients to get into the habit of flushing the colon, as is so often the case. This procedure has become a kind of fetish, and it seems to have come to such a pass that in any representative community the citizenship may readily be divided into two distinct groups—those who wash their colons regularly, and those who do not. It might



Fig 1—Barium enema entering colon

be well for the medical profession to determine what of good there is in this procedure and to protect the laity against certain fatiguing, unnecessary and expensive manipulations.

In a reply to a follow-up letter, recently received, this report is given: "Extensive internal irrigations have been used since my return home. I am not clear that they did me a great deal of good, though it seems a very rational and practical thing." The idea prevails, especially among the laity, and among some physicians, that the colon is a constant source of danger because of a supposed possibility of infection from pathogenic micro-organisms, or from absorption of toxic poisoning, and it must therefore be responsible for many human ills. For this reason the colon has become the field of exploitation and experimentation to an amazing degree. No more radical measure in medicine has been offered than that of some two decades ago, when Sir Arbuthnot Lane advocated the total excision of the colon in certain abdominal disorders, among which were chronic colitis with adhesions of the colon. Fortunately, the profession did not long follow this procedure. Partial colectomy came next with multiple short circuitings, and finally, it seems, colonic lavage became the vogue. This is a procedure which has been known for centuries but it comes this time with an intricate technic, requiring complicated armamentarium. Consequently, there are at present doctors, nurses and attendants who permit themselves to be designated as colon specialists. It is not unusual to find under the plate glass of the dresser in a hotel room a card on which these colon experts announce their willingness to lavage the colon before the guest retires. The degree of their efficiency is usually measured by the distance these specialists can thread the colon with a suitable tube, the amount of fluid they can introduce, and perhaps the size of the fee they exact.

But ours is not the only generation responsible for such exploitation of the colon. In an address given

"by Dr Arthur I. Hurst¹ before the Harrogate Medical Society, England, Nov. 26, 1921, entitled "The Sins and Sorrows of the Colon," he says "Pliny A. D. 77, tells how the Egyptians learned to wash their bowel from observing the habits of the ibis. He washed the inside of his body by introducing water with his beak into the channel by which our health demands that the residue of our food should leave. It is cruel to deprive the ibis of his claim to this epoch-making discovery, but the truth must be told, the ibis does not give himself a colonic douche, but after washing his beak in water he oils it in his preen-gland, which is situated near the anus, in preparation for preening his feathers." In the sixteenth century the enema reached the height of its popularity. It is recorded that Louis XIV received several thousand intestinal douches in the course of his life and that the pious Duchess of Alva treated her sickly son with enemas, in emulsion of religious relics but unhappily they failed to save him.

There is no doubt that in certain conditions a simple enema of warm salt solution, or one containing certain medication, is indicated and, when properly given, is a valuable therapeutic measure, but my contention is that it is given undue importance at times, and at times may do great harm because of grave pathologic conditions and unnecessary manipulation. Any fluid, even though it has the consistency of the ordinary barium enema, after it once passes the anal sphincter, will pass easily up the sigmoid and descending colon, across and down to the caecum regardless of the position of the body of the patient. This is easily demonstrated as shown with the roentgenograms taken by Dr C. Harvey Jewett, of our staff, in which he scheduled the rate in minutes of a barium enema as it transverses the colon from the anus to the cecum, using a small, hard rubber anal tip according to Hurst's suggestion, which delivered the enema just inside the anal sphincter.

Another film will show the position of an ordinary, so-called colon tube when the attempt is made to insert



Fig 2—Barium enema after one minute

it at the anus and pass it through the course of the large bowel. It is true that, with proper manipulation, a soft rubber tube may be passed through the sigmoid and probably to the splenic flexure, but what is to be accomplished by such a procedure? If the fluid goes up to the ileocecal valve and beyond it, without the distressing manipulation, what is to be gained by attempting to thread the colon? Some of the colon enthusiasts maintain that certain vaccines or micro-organisms cannot be "planted into the cecum except by being delivered through a rubber colon tube properly placed." It is my impression that any vaccine broth with no heavier consistency than that of an enema of liquid petrolatum or barium sulphate can be passed into the cecum with ease just as soon as the tip of the syringe nozzle is placed inside the anus. For these

reasons and others I feel that the attempted vaccine "implantations" are an unnecessary hardship to the patient. I am also convinced that in certain cases the irritation subsequent to the manipulation of the tube in the rectum and lower sigmoid, together with the distention brought about by quarts and sometimes gallons of water, may do harm.

In a paper presented by Drs. Friedenwald and Feldman before the American Gastro-Enterological Association at Atlantic City, last May, they concluded from experiments on animals that the prolonged use of even the simplest form of enema proved slightly irritating to the bowel. However, oil showed no effect. Weak solutions of chemicals of different forms produced changes ranging from slight inflammation to ulceration. They also reported a tendency to a thinning of the intestinal wall and a loss of elasticity.



Fig. 3—Barium enema after one and a half minutes

Figure 8 shows the pathologic changes in a descending colon removed at autopsy from a patient who had an ulcerative and hemorrhagic colitis. If we had succeeded in distending this colon in a flushing process, as suggested, we would, without doubt, have produced a perforation long before it occurred.

The intestinal flora may be readily modified or changed by alteration of diet. A low carbohydrate diet for a few weeks, or, again, a low protein diet for the same length of time, may result in a more definite change in the intestinal flora, when such a change is indicated, than the feeding of certain micro-organisms or the administering of daily cathartics, or the extensive colonic flushings occasionally advocated.

It is encouraging to have this opinion corroborated by so able an authority as Dr. Arthur F. Hurst, physician to Guy's Hospital, already quoted who says, in addition, "It is of great importance that the douche should be properly instituted. Nurses are always taught to pass the tube as far into the rectum as possible, and are rarely satisfied unless 12 or more inches have been introduced. Until comparatively recently, I understand, this was the general practice, but the pelvic rectal flexure, where the freely movable pelvic colon joins the fixed rectum at an acute angle, is $4\frac{1}{2}$ inches from the anus, and it is a physical impossibility to pass a rubber tube beyond the flexure excepting through a sigmoidoscope which has been manipulated through the flexure. This was proved long ago by surgeon Goodhart, in the postmortem room in 1900 and again more recently I demonstrated the same fact with the x-ray, which show that the tube turns back when the flexure is reached and curls up in the rectum." This experience coincides exactly with our own as demonstrated by a roentgenogram taken with the colon tube carefully inserted supposedly to the extent of the entire length of the colon.

The teaching in medical schools and in training schools for nurses with reference to giving enemata

should be more specific than it appears to be. It should be taught that the difference between an ordinary enema and the so-called high enema is not determined by the length of the rubber tubing passed through the anus but by the amount of fluid used and the length of time allowed for it to flow in and out.

It might be said that the natural condition of the colon is to be more or less full, and any attempt to keep it empty by strong laxatives or large enemata or flushings is based on a misconception of the function of the colon and will be likely to cause harm. The colon should have the same consideration and care in relation to disease as any of the other viscera and should not receive any more abuse than any other organ when there seems to be a dysfunction.

ABSTRACT OF DISCUSSION

DR. SARA M. JORDAN, Boston. Dr. Lichty spoke of the difficulty of diagnosis of colonic functional disease. The difficulty is great. In one point I would differ with him. He said that he thought it was a little more unfortunate to operate for a surgical lesion and find none than to carry on a long medical treatment for colonic functional disease and then discover a serious organic lesion. I have been so trained by my surgical associates, medical-minded as they are, that I find myself more chagrined to have carried on the long medical procedure in the presence of a serious organic lesion requiring surgery than to have had a patient operated on when no organic lesion was found and then to have carried on the medical procedure for a functional disease. The symptoms of colonic functional disease mask and induce and increase symptoms of organic disease. I have in the past year collected a small group of cases in which the symptoms of diaphragmatic hernia were undoubtedly induced by functional colonic disease. They showed a definite, large hernia which could be kept symptom free if treatment of the colon and a mild hyperchlorhydria were carried out. They were not good surgical risks and could not be operated on, but if the colon was not distended and functioned normally those patients had no symptoms from the diaphragmatic hernia. The pernicious and the baneful effect of colonic irrigations cannot be stressed too much.

In the first place, it is an unnecessary intervention and the trend of modern therapy in other conditions, such as in heart disease has been against and away from unnecessary intervention. Secondly, the loss of body fluids which must occur with colonic irrigations or with any forced stimulation of the colon is, I believe, an important consideration. It has recently been shown how important the loss of gastric and pancreatic secretion is to a lesser degree. I

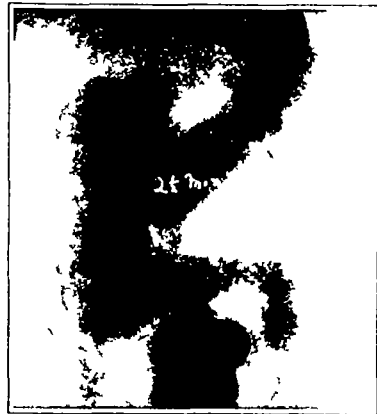


Fig. 4—Barium enema after two and a half minutes

think the loss of fluid from the colon which follows colonic irrigation should likewise be an important consideration in the discussion of this form of therapy. The distention and loss of tone that must occur from colonic irrigations and does occur as we have observed in cases referred to us is also a serious consideration and should be used as an argument against this vogue.

DR. JOHN G. MATEER, Detroit. I am heartily in accord with everything Dr. Lichty has said. As to the differential diagnosis of these functional colon conditions I think it will be agreed that there are still too many so-called chronically inflamed appendices and relatively thin-walled noncalculous

gallbladders being removed because colon distress is attributed to pathologic changes of the gallbladder or appendix. This error could be materially reduced if further emphasis were placed on the characteristic clinical picture of the irritable colon. Time does not allow a development and illustration of this point. As regards treatment, extremely satisfactory therapeutic results can be obtained in a high percentage of these irritable colon cases provided the diagnostic analysis is complete and the therapeutic program is correspondingly comprehensive, and provided, finally, that the cooperation of the patient is obtained. In my experience, the most important single point in the successful treatment of these patients consists of a painstaking analysis of the patient's nervous status, followed by the elimination of those faulty habits which tend to increase the general nervous irritability which, in turn, is reflected out through the autonomic nervous system to the wall of the alimentary tract. In this connection it is absolutely essential to eliminate such habits as hurry, overwork, worry, the so-called anxiety state, the use of external stimulants, such as coffee and tobacco particularly, abnormalities in the sex life, which in certain women patients constitute an important factor in maintaining the nervous tension, and other similar habits. Dr. Lichty has simplified the discussion of diet in these cases, and properly so because so many of these patients come to the physician with an elaborate, fixed idea about some diet food, which has to be eliminated. I am heartily in accord, also, with his criticism of the indiscriminate use of colonic irrigations. As to drug therapy in these patients,

of feces. Secondly, it requires a long time to give a colonic irrigation. It is not a matter of getting water to the cecum and out again; any enemata will do that. That is why an enemata may be a bad thing. The colon should never ordinarily be emptied so completely as that, and that is an objection to frequent irrigations. Irrigation of the colon must be done slowly. I use the two-tube method because I don't want the colon overdistended. We go about it very slowly, placing the bag so that there is a level of the water of about a foot and a half or two feet above the patient to make very low pressure. It takes me from three quarters of an hour to an hour. Are these colonic irrigations of any use? Yes. Sometimes after a lot of soaking I get out nasty mucus. I have bottles of preserved mucus and great crabs of the intestine up to 18 inches in length, dark colored and vile-smelling when expelled, and this does not come down at first, and it rarely appears in the feces so far as I can see. If these mucous substances never appear in the feces, what becomes of them? They must be absorbed into the system and they are poisons. But I would sound a warning; irrigations should not be abused. Using them every day is a serious mistake.

DR. L. J. HIRSCHMAN, Detroit: I agree most heartily with the warning, Dr. Lichty has uttered about the chain-store system and the corner-cleansing stations for the colon. It has come to a point where standardization has been carried a little bit too far. He stated that a complete roentgen examination is made, but he did not specify that, besides the making of serial plates,



Fig. 5—Introduction of a colon tube supposed to have passed to the cecum.



Fig. 6—Barium passes through the tube shown in figure 5.



Fig. 7—Barium enema administered through an ordinary anal nozzle in a patient with redundant sigmoid loop.

I have found that small doses of phenobarbital and the time-honored remedy, belladonna, are particularly helpful in the early therapy. I should like to emphasize the fact that, although there is probably no medical condition confronting the physician which requires greater patience than the handling of some of the more difficult cases, nevertheless the therapeutic results more than justify the time and effort expended.

DR. WALTER A. BASTEDO, New York: A barium enema does not represent the normal state of the colon; it represents the effect of an enemata on the colon, with extreme distention, a condition in which the colon is not ordinarily found at all. Haustral contractions are not peristaltic waves, though often thought to be so by those interpreting them. Haustral contractions may last a half hour or an hour. I have seen them last a long time in an animal with its abdomen opened. They are retarding contractions of the colon. They keep back the contents of the colon. They prevent movements all the time as the material comes down from the ileum into the colon; therefore they are not peristaltic waves at all. They are fixed, spastic waves. On the other hand, peristaltic waves are driving waves and in the roentgenograms are distinct from these. I agree absolutely with Dr. Lichty about colonic irrigations. I am an advocate of colonic irrigations because they do something, just as I am an advocate of lavage of the stomach in the proper place. Colonic irrigations are not usually given well. In the first place, the patient must have had the morning movement or an enemata should be given to produce the movement, because a colon cannot be properly irrigated if the lower bowel is full

he includes a careful fluoroscopic investigation with the patient turned from side to side not only after a meal but also after a sufficient injection of barium into the bowel to outline it without the distention about which Dr. Bastedo properly utters a warning note. He is right that a barium enema represents a distended colon and not a normal one. However, often one must inject enough barium from below to get a complete filling, so that on manipulation one can discover whether there are any filling defects which are on a different plane from the anterior-posterior through which plane most roentgenograms are made. Most of the patients who come to the physician suffering from colonic dysfunction are women, and a large majority of those women have had, at some time, an abdominal operation, and most of those women have been operated on by physicians under general anesthesia when in order to have a clear field, whether the patient was in a Trendelenburg position or not, quantities of gauze were used to "prick off" the intestine. If any one thing insults the delicate serous membrane, it is rubbing it, straining it, pushing it with gauze, whether it is rough, wet or dry, and many women who suffer from colonic dysfunction improperly interpreted and call on the colonic laundries for assistance without getting good medical advice are not suffering so much from integral disease of the bowel wall as from abnormal irritation from some insult offered by a well-meaning surgeon in the course of an abdominal operation. I am a surgeon myself. I feel that the gauze should be protected with rubber dam and a spinal anesthesia used so that the bowel lies where it is put and then some of our friends will not have so many cases of

colonic dysfunction. The male patients and many female patients, who have not enjoyed the luxury of an abdominal operation, owe their crises of colonic dysfunction to legislative enactment. Since the Eighteenth Amendment has come into force, many people who, previous to that time, did not feel the need of alcoholic stimulation now believe that "forbidden fruits taste sweetest" and are now "making their own." As a result of the irritating quality of alcoholic fluid sent into the colon, they not only have their digestion impaired but their colons are irritated, and many cases of disturbed colon or colitis seem to occur.

DR JULIUS FRIEDENWALD, Baltimore. We have been trying to discover the effect of colonic enemas and irrigations on animals and we have carried out at our clinic at the University of Maryland some experiments in which we have studied the colons in dogs that have been subjected to enemas over long periods. We have noted that the continued use of enemas is harmful to the bowel and is likely to induce a variety of colonic disturbances ranging from a mild to a more or less severe type. Water, oil and acriflavine hydrochloride (1 3,000) produce less irritation, and soap-suds and chemicals, even in weaker solutions, may cause extensive ulceration.

DR SEALE HARRIS, Birmingham, Ala.

The most important thing in the treatment of most colonic conditions is to let the colon alone and treat the patient. Much harm has been done by continuing smooth diets too long. Regarding the etiology of this condition, I think it is important to consider the vitamins, about which some people say nothing is known, but there is a great deal that is known about vitamins. Usually the people who say nothing is known about vitamins are those who really do not know anything about them. Sugar saturated, vitamin

starved Americans living on white flour bread, white rice, white potatoes, lean meats, oleomargarine butter and sugar saturated desserts and soft drinks are prone to develop disturbances of the colon. Most persons live on such a deficient vitamin diet and as a result they have intestinal infections of all kinds. I agree with Dr Hirschman that if people could be taught to forget bran, they would be a lot better off in these cases. Though I think it is not the smooth diet that is needed so much as a well balanced diet, one rich in vitamins consisting largely of fruits and vegetables, milk, cream and butter and meat once a day. Cut out the sugars entirely and reduce the bread. In other words, a low carbohydrate, rich vitamin diet. It is also important to teach the patient with disturbances of the colon how to live, work eight hours a day, not too much but work enough, with eight or nine hours in bed at night and a rest at noon. As Dr Weir Mitchell has said, the best doctors of all times have been those who regulated the lives of their patients so that they could be restored to health and maintain health afterward.

DR JOHN A. LICHTY, Clifton Springs, N. Y. The main object of the paper was to call attention to the rather intensive irrigation of the colon which is done in a somewhat promiscuous

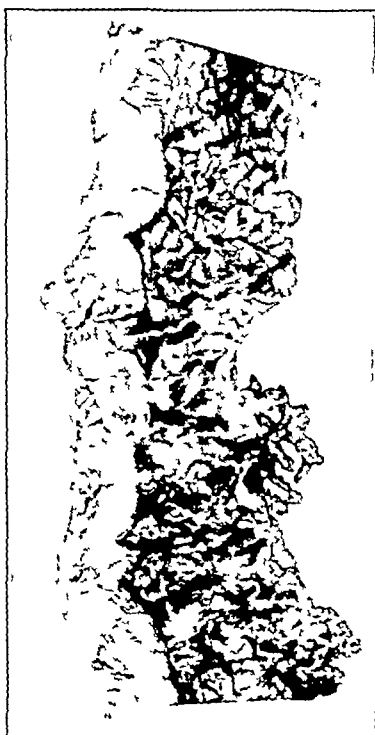


Fig. 8—Descending colon recovered in a case of hemorrhagic colitis with perforation.

way for conditions in which the colon has no part. I am indebted to Dr Friedenwald for referring to his recent paper, read at Atlantic City, in which the results of long continued, and large irrigations of the colon of the dog are reported. It seems that an irritation of the mucous membrane and loss of tone of the colon resulted. The conclusion is that such irrigations of the human colon may do more harm than good. With reference to Dr Jordan's remarks, I would say that while the chagrin to the physician may be great when the pathologic condition in the abdominal cavity that warrants operative procedure is overlooked, it does not compare, sometimes, with the pain and suffering which these patients endure who have repeated laparotomies followed by extensive adhesions. With reference to the difficulty in interpreting the real condition of the colon with the barium enema to which Dr Bastedo has called attention, one must take a conservative attitude in drawing conclusions from the test. The patient should have repeated barium enemas under different conditions, at one time after being under the influence of belladonna to the physiologic limit and again without belladonna. The "vile stuff" in the colon to which he refers is the normal or usual content of the colon, but, unfortunately, nature has so provided that this is not necessarily absorbed from the bowel and does not need to be washed out to the extent of 95 per cent to insure health and well being. There are conditions in which the colon should be emptied by lavaging, but it should be done under careful supervision, with a nurse or an attendant, if desirable, but the enthusiasm for washing until the last remnant of feces or the last bit of mucus disappears should be guarded against. It may be dangerously fatiguing in certain cases. The difficulty of furnishing the colon patient with sufficient vitamins, as suggested by Dr Seale Harris, should not be an insurmountable one, so long as the green vegetables and fruits can be purged.

SPONTANEOUS PNEUMOTHORAX *

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AND

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CHARLESTON, S. C.

Spontaneous pneumothorax is a term that is generally used to indicate the presence of air in the pleural cavity from an internal cause. Some writers, however, consider as spontaneous only those cases in which there is no associated pathologic change of the lung (the so-called idiopathic pneumothorax). In this paper we shall consider those occurring from any internal cause.

Spontaneous pneumothorax, taken as a whole, is not an uncommon occurrence. However, the so-called idiopathic pneumothorax is rare, there having been only about seventy cases reported, and in no instance was there a report of more than four cases by any one man. There are five case reports included in this paper of patients in whom no pathologic change of the lung was demonstrable nor any history of previous lung trouble, and the subsequent history shows them to be normal in health. One other case gave no history of previous lung trouble and the normal side at the time of examination showed no evidence of disease. However, we were unable to repeat the examination after the collapsed lung had resumed its normal state. All of these are therefore considered to be definite idiopathic cases.

The most common etiologic factor responsible for the development of this condition is tuberculosis. The records show that this is the cause in about 80 to 90 per cent of the adult cases and 40 to 50 per cent of the cases in children. The difference here is due to the fact that there are more cases in children than are

* Read before the Section on Radiology at the Eighty First Annual Session of the American Medical Association, Detroit, June 2, 1930.

crused by the acute infectious diseases. Among the other underlying causes are empyema, gangrene, bronchiectasis, infarct, pneumonia, emphysema, new growths and very rarely the action of gas forming bacteria in a pleural exudate.

As the name implies, no cause is known for the idiopathic group. However, there are various ideas put forth as to the cause. Some state that these cases are probably due to a tuberculous infection in which there are no physical signs obtainable and no positive roentgen evidence is obtainable. The theory has also been advanced that a tuberculous process is present and causes the rupture and that the collapse and rest of the lung allow this process to heal entirely without leaving any scar formation. Others think the condition due to the rupture of an emphysematous bleb on the margin of the lung. Still others think that probably there has been some inflammatory condition causing adhesions between the visceral and parietal pleuras and that unusual exertion causes this adhesion to be torn loose, thus causing a rupture. This type of case rarely ends fatally, and it will be difficult ever to establish a real cause.

The exciting causes are coughing, sneezing, laughing, vomiting, hiccups or muscular strain, or there may not

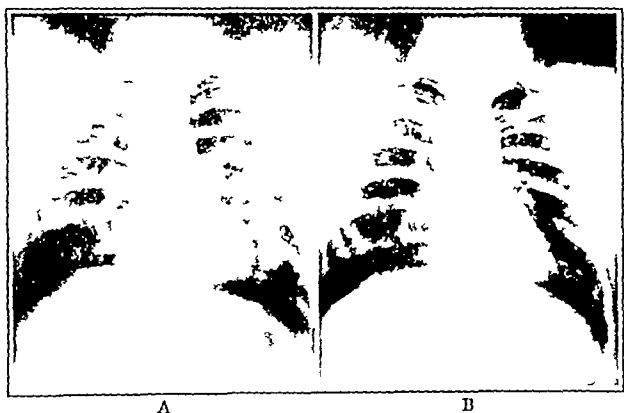


Fig. 1 (case 1).—Appearance of chest. *A*, twenty-four hours after onset showing complete collapse of the left lung but very little displacement of the mediastinum. *B*, four weeks after attack, normal.

be an exciting cause. The condition often occurs while the patient is at rest or even asleep.

If the condition occurs as the result of a preexisting tuberculosis or other inflammatory disease, the onset may be insidious and the patient may not know when it happens. This is due to the presence of adhesions and to the fact that the lung cannot collapse suddenly or completely. On the other hand, if there are no adhesions the onset is sudden and there is a sharp, stabbing pain in the chest followed immediately by a feeling of suffocation, air hunger and a feeling of impending death. There is usually a marked cyanosis and often collapse. There is also a marked orthopnea and the patients cannot lie down until the acute stage is passed. When able to lie down they usually lie on the unaffected side. There may be a distressing cough, but this is not a constant symptom.

After the first twelve to twenty-four hours the character of the pain changes to a dull pressure sensation, which the patients describe as a heavy weight on the chest. They become more comfortable, the dyspnea becomes less marked, and unless complicated by fluid there are no symptoms after a few days.

If seen early, the patient is cyanotic and there is an expression of extreme anxiety. The alae of the nose

are dilated and the effort to breathe is noted. The respirations are shallow, rapid and forced, and the accessory muscles of respiration are brought into play.

On examination the following signs are usually found. The affected side is larger than the unaffected. The intercostal spaces are pushed outward. There is little or no motion on respiration. The cardiac impulse may be seen to be displaced. There is diminished or absent fremitus. The cardiac impulse is felt and is displaced away from the affected side.

The percussion note is tympanitic and the tympanic area is larger than the normal lung. The percussion note may change when the patient opens and closes his mouth, owing to the free communication of the intrathoracic air with the outside air. The cardiac dullness is displaced or in some cases cannot be elicited. If fluid is present there is a corresponding area of dullness, which changes completely with a change of position.

The breath sounds are suppressed or entirely absent. If they are present, breathing is amphoric in type. Voice sounds are also diminished or absent. A succussion sound is often heard even when there is no evidence of any fluid present. The con sound is a nearly constant sign and is one of the most significant.

The roentgen examination should be made by both fluoroscope and film. The upright position is the most satisfactory, as it is easier in this position to determine the presence and amount of fluid. The appearance will vary according to the degree of collapse. The air shows as a very clear area in which there are no lung markings. If adhesions are present they show as irregularly expanded areas, held to the chest wall, and they are denser than the surrounding collapsed areas. The mediastinum is shown displaced away from the affected side. If fluid is present it shows as a dense shadow at the lower part of the chest, which changes position as that of the patient is changed. By shaking the patient one can form waves and notice them pass through this fluid. Waves are noted also as synchronous with the beats of the heart.

The duration of the disease depends on the underlying pathologic changes. The uncomplicated cases usually clear up in from two weeks to two months but may last much longer. One case is reported that lasted for sixteen months and then cleared up completely. Another case has been known to exist for twenty years.

Fluid rarely forms in the cases in which pulmonary changes cannot be demonstrated but is common in the tuberculous cases. The fluid may be, and usually is, a pleural effusion but may at times be blood from a ruptured vessel. If the fluid becomes infected, the course of the disease is greatly prolonged.

The prognosis in the tuberculous cases is grave, the mortality being about 70 per cent. In several cases of known tuberculous origin, the tuberculosis has been completely arrested by the collapse and rest of the lung.

The prognosis in the cases without demonstrable pulmonary changes is favorable, only one of the fifty-eight cases studied by Russell and Reisman ended in death.

Bilateral pneumothorax is nearly always fatal and the patients die within a few hours.

Recurrence of the pneumothorax is not uncommon. One case is reported in which there were eleven recurrences. In another there were eighteen recurrences during a period of eight years, all of which were of the right lung except one.

TREATMENT

As it is necessary for the fistula to close before the lung can expand, the patient should be kept quiet, the cough should be controlled as much as possible, and deep inspirations that tend to aspirate infectious material into the pleural cavity should be avoided. This can be accomplished by strapping the side, which is the only treatment necessary in the mild cases with no fluid.

In the cases presenting a moderate amount of fluid, if the symptoms are not severe it is best to delay

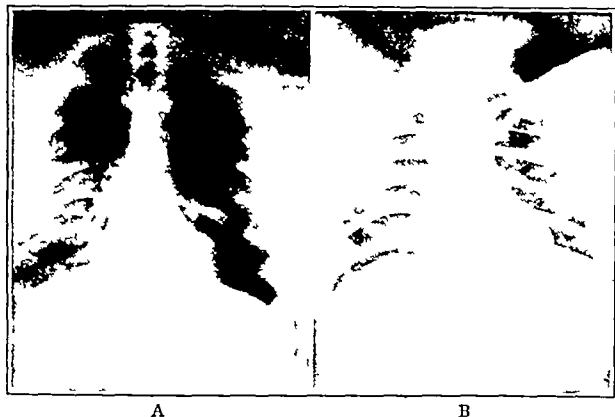


Fig 2 (case 2)—Appearance of chest A twenty four hours after onset B after twelve weeks normal

drawing off the fluid until the fistula has had time to close. On the other hand, when there is a large amount of fluid immediate tapping may be necessary to relieve pressure symptoms. In these cases it is best to draw off only a small amount of fluid at a time because of the danger of reopening the fistula and allowing infectious material to enter the pleural cavity.

In cases in which a frank purulent exudate is present, a thoracotomy is resorted to.

In some of the cases in which the opening is valvular in type, even though no fluid is present, the intrathoracic pressure may be raised to such a degree that the pressure on the heart is dangerous. In these it may be necessary to insert a cannula and remove some of the air.

REPORT OF CASES

CASE 1—E M S, a white man aged 32 a toll gate keeper who had had good health, without serious illnesses, tuberculous association, influenza or pneumonia, had had an unexplained mild diarrhea about one month before which had cleared before the present trouble. May 28, 1929, while standing with his arm resting on the side of a car and talking, he was seized with a sudden stabbing pain in the back at the angle of the left scapula, which then radiated over the whole chest. The pain was excruciating for about two hours when it was relieved by acetylsalicylic acid. The pain was accompanied by a marked dyspnea. After the effect of the acetylsalicylic acid had worn off the pain was never severe except when the patient attempted to lie down. For about a week he was unable to lie flat without severe pain. The patient never had any cough and after a few hours the dyspnea was not marked. He made an uneventful recovery and was apparently perfectly well in four weeks. He has had no subsequent trouble.

CASE 2—H W M, a white man, aged 38 or 39 a plumber, who had always had good health without lung trouble or association with tuberculosis developed a sudden acute pain in the lower part of the left chest, dyspnea and profuse sweat while he was seated at the table at home without any exertion. After a few hours the acute symptoms passed and the patient was comfortable except on coughing or deep inspiration. A roentgenogram taken Nov 3 1927 the second day, revealed no fluid

He had no subsequent trouble and was back at work in about two months. The lung was not completely expanded for more than three months.

CASE 3—A T C, a white man, aged 26 a clerk, had had no tuberculous association, and had always had good health except that about two years before he had had a sudden onset of acute pain in the left chest. This was thought by his physician to be pleurisy. On the second day there were signs of effusion. This rapidly increased and on the third day the left chest was filled with the effusion. The chest was tapped at this time and a small amount of fluid was removed which had the appearance of fresh blood. Two days later a large amount of fluid of the same quality was removed. No cause was ever found for this condition. In about five or six weeks the patient had fully recovered and there were no physical signs in the chest. Feb 17, 1928, after having gone to bed feeling perfectly well, the patient was awakened by an acute pain in the lower right side and he developed a severe dyspnea. Both were less severe the next day when he reported to his physician. The physical signs were typical of a pneumothorax, and roentgen examination confirmed the diagnosis. No fluid was formed, and March 2 the lung was about one-half expanded. April 3 the lung was shown to be completely expanded and otherwise normal. There was no evidence of any pathologic change. Since then he has been back at work without any evidence of trouble. In view of this attack, it is thought probable that the previous attack was a spontaneous pneumothorax also in which there was a rupture of a vessel of considerable size, thus accounting for the large amount of blood in the pleural cavity.

CASE 4—H D R, a white man, aged about 25, who worked at a filling station, had had good health, without previous lung trouble, association with tuberculosis and no recent illnesses. The patient had been drinking and had become nauseated. He was leaning against a tree in the act of vomiting when he was seized with a severe pain in the lower right side of the chest and back. He went home to bed. The pain continued and dyspnea developed. A roentgenogram the second day showed the right lung to be completely collapsed. The right chest was half full of fluid and the mediastinum was displaced to the left. There was no evidence of involvement of the left lung. The patient's chest was tapped and bloody fluid was removed; there was a slow expansion. There have been no check-up roentgenograms made since the lung has returned to normal. However, the patient, who has since left Charleston, has not reported any

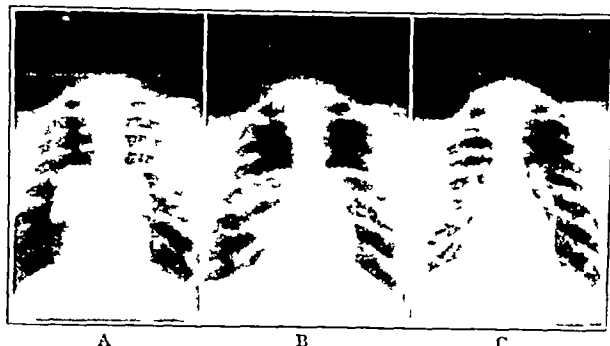


Fig 3 (case 3)—Appearance of chest A Feb 18 1928 complete collapse of right lung and considerable displacement of the mediastinum to the left right side of diaphragm displaced downward B March 2 right lung about one half expanded C April 3 right lung completely expanded and normal in appearance and mediastinum returned to normal position

symptoms of lung trouble and is apparently in perfect health and continuously at work.

CASE 5—A M S, aged 37 a clerk who had had no recent illness, no previous lung trouble and no tuberculous association while seated at a desk had a sudden acute pain in the right side of the chest with loss of consciousness for a few minutes. The acute pain passed after a few minutes and after taking acetylsalicylic acid but the patient has had some pain ever since the onset (forty-eight hours). Symptoms at forty-eight hours were pain in the right side of the chest exaggerated on deep inspiration and marked dyspnea on exertion. Dec 7, 1929, a

roentgenogram showed a complete collapse of the right lung. December 14 a fluoroscopic examination showed a slight expansion. December 30, fluoroscopy showed the lung to be about one-half expanded, more at the base than at the apex. There was a very small amount of fluid. Jan. 6, 1930, fluoroscopy showed a complete expansion except for a small area at the apex. The film taken January 10 showed a complete expansion. There has been no evidence of any definite pathologic changes in the lung. The patient was symptom free and there were no physical signs.

COMMENT

These cases are reported because of the unusual number in one clinic in a relatively short time, also because of the fact that although in most cases the collapse of the lung was complete, the symptoms were unusually mild and of less than the average duration.

The most unusual feature is the fact that there were two cases in which there was a massive hemorrhage

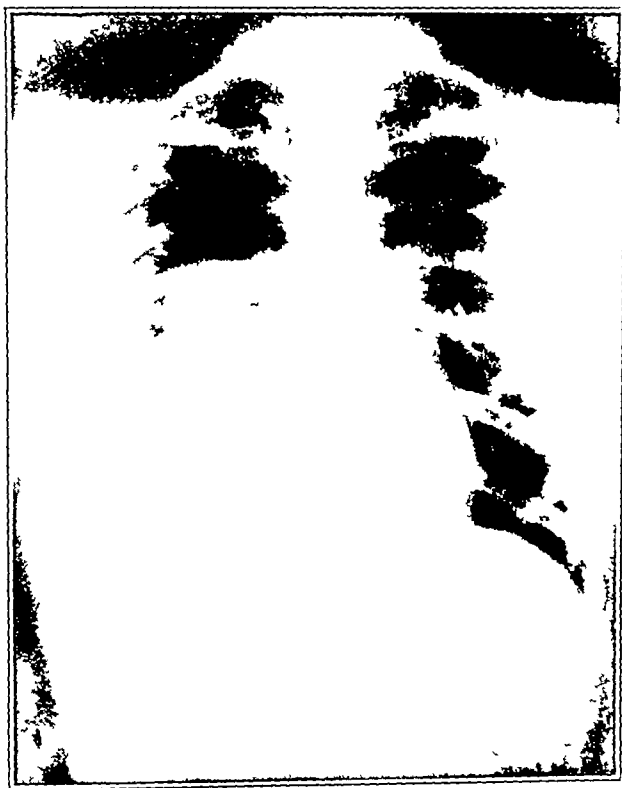


Fig. 4 (case 4)—Appearance of chest twenty four hours after onset right lung completely collapsed and right chest cavity about half full of fluid which proved to be blood.

into the pleural cavity. In reviewing the literature there were no cases found in which there was an associated hemorrhage of this extent.

Riverside Infirmary

ABSTRACT OF DISCUSSION

DR JOHN M. BARNES, Ann Arbor, Mich. This paper introduces an entity that may be confused with a manifestation of early tuberculosis. The diagnosis of idiopathic pneumothorax should be made only after one has exhausted all efforts to establish a cause for the pneumothorax. In the university health service and hospital we have had six cases, all of them in young white men. In one case fluid developed following the pneumothorax. There were no cases with blood. One of the cases was of the recurrent type and I think goes to show that this condition can occur without any definite infectious process in the lung. In this particular instance the man had four attacks within a year. He was followed both at Ann Arbor and at

Walter Reed. In neither place was there any evidence of pulmonary disorder found. In this instance, then, we are dealing with this obscure type, which is known as idiopathic. It may be due to a bleb. The only thing in his history that was suggestive as to cause was an allergic tendency. He had hay fever but no asthmatic symptoms.

DR W. K. LINT, Detroit. I myself have had the experience of going through pneumothorax. In my case, however, I believe it was due to a postoperative condition. I had a mastoid operation a few months previous to the spontaneous pneumothorax. I was walking one day, to take a street car, and had gone about half a block, when I suddenly experienced a peculiar sharp pain in my side. My respiration immediately became rapid and breathing short. Fortunately there were two of my friends with me and they helped me back to where I came from. My left lung was completely collapsed and my heart was displaced almost entirely to the right. Being a medical man I have had the good fortune of being able to check up the condition from the day of the occurrence until today. It took me two years to eliminate the fluid at the base of the left chest. I had films taken of it at intervals of about every six months. I am interested in Dr. Taft's paper because I want to find out just what is the exact cause of a spontaneous pneumothorax. Tuberculosis, they would say, but here I am still standing before you seven years after the occurrence. I have in mind two other cases. One was, I believe, due to an extreme exertion. The patient was suffering from asthma. Asthmatic patients, as a rule, do not have tuberculosis. He unfortunately died of a decompensated heart. The other case was due to trauma, and the patient kept on working and held his job.

DR R. T. WILSON, Temple, Texas. I have had the unusual experience of observing this idiopathic pneumothorax occur in both lungs in the same patient at different times. A university student about 21 years of age developed the typical stabbing pain without apparent cause, from which he recovered in about a month. Thirty-one days from the first attack he developed exactly the same type of lesion, so far as could be determined, in the other side. Every type of examination was made even by a tuberculosis specialist. The cause has not been discovered yet. At a recent examination no evidence of the condition could be found and the patient felt that he was perfectly well.

DR L. T. LEWIS, New York. Along the same line I have one case in which there was a bilateral pneumothorax of this spontaneous type, in which collapse on the left side followed within a week after collapse of the right side. There is a question in that particular case whether air may or may not have gone across the mediastinal septum. Some experimental work on dogs has shown that it is possible for a communication to exist between the two sides through the mediastinum; that is, colored fluid put in one side of the chest appears on the opposite side within a few hours. In my case, the young man who had a bilateral spontaneous pneumothorax fortunately did not have a complete collapse such as occurs in some cases, but a partial collapse, and a week later showed just about the same amount of collapse on the opposite side. He made a complete recovery and has shown no evidence of tuberculosis. The other point I wish to stress is that some patients are slow in recovering the expansion of the lung. I have one case in which expansion has not occurred after a number of years. In one case expansion occurred just about as hope had been given up, about a year afterward. In that case aspiration of air was done two or three times and the patient was directed to cause some increased pressure by blowing water from one bottle to another, and finally complete expansion occurred and he has had no signs of tuberculosis or any recurrence of collapse. I had one other case recently in which there was collapse on one side and after recovery there was collapse on the other side. The point that I think ought to be stressed particularly from the roentgenologic standpoint is that there is this type which is not associated with tuberculosis. I think it is unfortunate if that is not stressed because a patient who suffers from this condition, if it is not definitely told him, will think it resulted from some serious trouble with his lungs, particularly tuberculosis. I think that is a grave mistake. I have seen about twenty-five cases and I have seen also a number of cases complicating tuberculosis. I have seen it also occur on both sides in tuberculosis. In the twenty-five nontuberculous cases the only complication has been

a pleural hemorrhage in one or two, and the delayed expansion over some time, but in none of these cases—and some of them go back fully eighteen years—has there developed any tuberculosis. I have followed several of them with care roentgenographically for years.

DR ROBERT B. TAFT, Charleston, S. C. Another thing that I wanted to bring out is the frequency of pneumothoraces that I have seen ushering in tuberculosis. For example, a patient who seems to be absolutely healthy will develop a pneumothorax. After the lung is expanded examination discloses a definite tuberculous lesion. A good many of those cases I have seen, I dare say within the past three years' time. I have never seen mention in any textbook about the frequency of tuberculosis being ushered in by that.

THE PRESENT-DAY MANAGEMENT OF STONE IN THE KIDNEY

CHARLES PIERRE MATHÉ

SAN FRANCISCO

Stone has received more attention than any other lesion of the kidney, however, certain conservative methods are retained which often result in the destruction of the kidney harboring the stone, and certain benign operations are continued which, in spite of being popularized for their simplicity and safety, favor the recurrence of stone. This paper reviews seventy-four cases of renal calculi removed by surgical intervention or cystoscopic maneuvers. Silent, quiescent, non-obstructing calculi unaccompanied by infection were untreated and are not included. The etiologic role of congenital deformity, stasis and infection is carefully studied and correction emphasized. The pathologic effects of stone, pyelonephritis, ulcerative necrosis, renal abscess, perinephric abscess and hydronephrosis are thoughtfully considered. These pathologic processes progressively destroy the kidney and emphasize the necessity of early recognition and removal of stone. Several cases presenting the so-called nonsurgical coral-form type of stone are reported in which fragments broke off and passed into the ureter, caused obstruction, and resulted in rupture of the kidney, abscess formation or other grave complications. Nephrotomy, pyelotomy and pyelonephrotomy are selected for the different types of stone with the purpose of conserving renal tissue and minimizing recurrence.

REPORT OF CASES

CASE 1—J. S., a man aged 58, a lawyer referred by Dr. John Gallwey, entered St. Mary's Hospital Dec. 20, 1928, because of pain and swelling in the right lumbar region accompanied by nausea and vomiting and followed by chills and fever. At 55 an impacted stone was removed from the urethra following which he passed gravel and numerous stones. Five months later a larger stone was removed from the urethra. When the patient was 56 I performed a lithotripsy for bladder stone. At this time roentgenograms revealed a coral-shaped stone in both kidneys and a spindle-shaped calculus in the lower left ureter. Following meatotomy and dilation of the left ureter the stone passed into the bladder and was removed by rongeur forceps. The patient was advised to have the stones in both kidneys removed by operation but intervention was refused. From time to time fragments from the stones in the kidneys passed down the ureter and were expelled spontaneously or removed from the bladder through the operative cystoscope. Urine examination revealed masses of leukocytes and erythrocytes, albumin and myriads of colon bacilli and

staphylococci. A phenolsulphonphthalein intramuscular test resulted in the return of 15 per cent in two hours. Examination of the blood revealed hemoglobin 41 per cent, erythrocytes 3,142,000, and leukocytes 27,300, 11 mg. of creatinine was recovered in 100 cc. of blood. Roentgenograms revealed a large right kidney, obscuration of the psoas shadow and a calculus in the region of the ureteropelvic junction. The catheter could not be passed by this impacted calculus.

Jan. 21, 1928, a transfusion was made.

January 23 the kidney was attacked through a lumbar incision and when the renal loge was opened 1000 cc. of thick pus was liberated from a perinephric abscess which had caused compression on the liver and diaphragm. A firmly impacted stone measuring 2.5 by 1 cm. was removed by a pyelotomy incision. A number of cortical abscesses were found in the kidney. Because of the severity of the infection and the extreme debility of the patient, the kidney was not removed. Following this procedure the patient greatly improved but the wound continued to drain pus. He left the hospital February 21, the leukocyte count had dropped to 12,400 and he felt stronger. About two months later the infectious process present in the right kidney underwent considerable necrosis and invaded the lung. Mercurochrome-220 soluble injected into the lumbar sinus would immediately be coughed up by the patient. The renal function progressively lowered and on Christmas 1928 the patient developed influenzal pneumonia and died.

This case exemplifies the constant danger of the type of coral-shaped stone in which fragments break away and obstruct the ureter. The fragment that obstructed the ureteropelvic junction on the right side blocked drainage, causing acute backpressure in the kidney and extension of infection which had existed in the pelvis for years, into the cortex, resulting in multiple abscesses of the kidney and a huge perinephric abscess. At the time of operation, the patient's condition only permitted drainage and removal of the obstructing stone in the pelvis.

CASE 2—B. K., a woman, aged 68, a housewife, referred by Dr. J. H. D. Roger, entered St. Mary's Hospital, April 14, 1925, because of pain in the region of both kidneys, frequency of urination, impaired heart action and extreme debility. For the past few years the patient had passed a number of stones and experienced frequency, dysuria, hematuria, bilateral dull lumbar pain and the passage of foul smelling urine. Phenolsulphonphthalein 5 per cent was recovered in two hours after intramuscular injection. Blood examination revealed hemoglobin, 70 per cent; erythrocytes, 4,168,000; leukocytes 42,250. The urine contained albumin, masses of leukocytes and erythrocytes and swarms of bacteria. Roentgenograms revealed stones in both kidneys which were considerably enlarged also a stone in the region of the lower portion of the right ureter. As the patient was in a precomatose condition eliminating practically no urine immediate drainage was advised and refused. The patient developed complete suppression of urine, went into uremia and died a week later.

Necropsy revealed a left pronephrotic kidney presenting numerous abscesses. A number of stones were found in this kidney, one was tightly impacted in the ureteropelvic junction obstructing the outflow of urine. The right kidney showed acute hydronephrosis, the obstruction being a stone in the lower ureter. One may assume that if the stone had been removed from the lower right ureter when the patient was first seen the relief of obstruction might have allowed the renal function to return in the kidney presenting rather early hydronephrotic changes. Infection in the right kidney had ended in entirely destroying this organ and nothing could have been done except radical removal.

CASE 3—H. T., a man aged 45, a former middle weight prize fighter entered St. Mary's Hospital Feb. 11, 1924, complaining of pain and swelling in the region of the right kidney, the passage of gravel, hematuria, dysuria, edema of the eyelids, loss of weight and weakness. At the age of 43 a number of calculi passed from the right ureter following cystoscopic

From the Department of Urology, Saint Mary's Hospital.
* Read before the Section on Urology at the Eighty-Fifth Annual Session of the American Medical Association, Detroit, June 2, 1930.

maneuvers consisting of merotomy of the ureteral orifice and progressive dilation of the ureter with bougies. In performing the phenolsulphonphthalein test 50 per cent was recovered in two hours after intramuscular injection. A roentgenogram revealed a calculus in the left kidney pelvis and impacted stone in the right lower ureter, bilateral pyelonephritis and hydronephrosis and hydronephrosis on the right side. One-half hour after intravenous injection, 12.5 per cent phenolsulphonphthalein was recovered from the right ureter and 5 per cent from the left ureter. Operation was advised it being my purpose to remove the calculus from the left kidney in which the infection was less than in its fellow. Operation was refused and subsequent examination October 6, revealed a calculus forming in the right kidney pelvis. Bilateral merotomy and renal lavages were performed and progressive dilation of the ureters was made following which the patient passed dozens of stones from the right kidney the largest of which measured 1 cm in diameter. October 21, a piece of one of the stones (which had rapidly increased in size and number in the right kidney) passed down the ureter and completely obstructed it. The patient presented a huge swelling in the kidney region, had a high fever and was toxic. In spite of the drainage of pure pus obtained by passing two number 6 Charrière ureteral catheters beyond the obstructing stone the patient became more toxic and progressively weaker. September 26, a nephrectomy

removed at once. These might completely obstruct the ureter at any time and in kidneys presenting chronic pyelonephritis cause invasion of the cortex by the infecting organisms present, resulting in complete destruction of this organ.

ETIOLOGIC ROLE OF STASIS AND INFECTION

The etiology of stone formation is still unsolved, however, in certain individuals it is due to chemical and metabolic processes more or less influenced by the food intake. Keyser¹ was able to reproduce calculi in the kidneys of rabbits by feeding experiments. Holmes and Caplan² recently made a geographic survey of stone in the United States and attributed the high incidence of stone formation in southern Florida to the excessive intake of fruits and vegetables, the alkaline ash producing foods overwhelm the protective mechanism in the urine, resulting in the formation of stone. It is not uncommon to see calculi rapidly increase in size in patients who, in their zeal to combat acidity and prevent stone formation, overwhelm the system with mineral waters of high alkaline concentration. Numerous investigators have emphasized the role of faulty metabolism brought about by diet and climate, yet it is not in the scope of this paper to discuss them. In some instances stone formation is favored by stasis, as evidenced by finding stones in the bladder and kidneys where free drainage is obstructed by the hypertrophied prostate or by a urethral stricture. Likewise, one often finds stones in kidneys presenting congenital anomalies, such as the horseshoe kidney, ectopia, bifid pelvis and ureter, congenital hydronephrosis and hydro-ureter, in which the drainage of urine is impeded by malformation. Hunner³ has called attention to the role of the ureteral stricture in the production of stone. Burford,⁴ Ward⁵ and Pillet⁶ have emphasized the incidence of stone in ptotic kidneys. Forty per cent of the cases here reported presented stasis in the upper and lower urinary tract (table 4), and as far as I was able I corrected these obstructive lesions.

Infection also plays a role in the production of stone. There is no doubt that certain stones form around a nucleus consisting of bacteria. The bacteria cohere by and of mucinous cement material present on top of which urinary salts are readily precipitated. In others precipitation of urinary salts is due to chemical changes caused by the micro-organisms themselves. On the other hand, infection may be the result of chronic irritation due to the stone which reduces the local resistance of the kidney, making it more susceptible to invasion. After infection has set in it may cause the formation of secondary stones. The secondary role of infection in certain cases is exemplified by the prompt disappearance of inflammatory processes sometimes following the removal of stone. After the removal, pyelonephritis

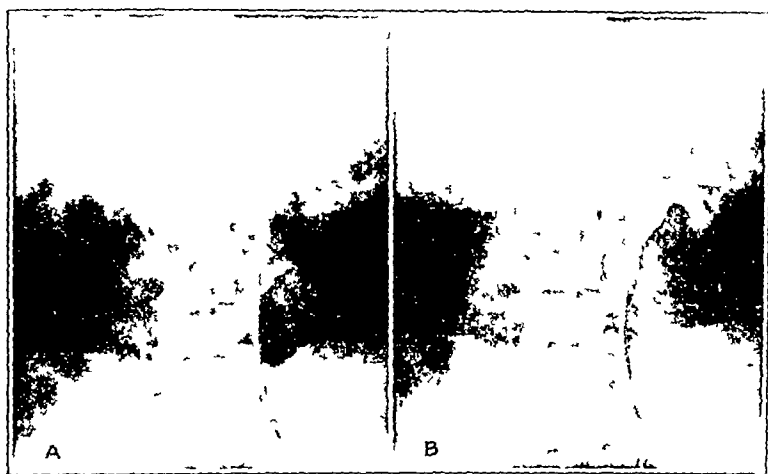


Fig. 1 (case 1)—A coral shaped fragmenting stones in both kidneys in a man aged 58 accompanied by infection. B ureteropyelogram locating calculus and showing early hydronephrosis. Operation was advised and refused. Obstruction caused by a fragment lodging in the right ureteropelvic juncture resulted in an abscess of the kidney, perinephric abscess and lung fistula. Surgical removal of the calculus and drainage of the abscess were done with amelioration of symptoms. The patient died a year later of pneumonia.

was performed and a large pyonephrotic kidney containing numerous calculi, the largest 5 cm in diameter, were removed. The ureteral calculus was grasped by long forceps and removed through an opening high up in the ureter. The convalescence was somewhat stormy and the patient left the hospital three weeks later. Since that time, repeated roentgenograms have been taken of the remaining left kidney. It has greatly hypertrophied and the calculus contained in it has taken on a coral shape and has almost entirely filled the pelvis and calices and on Feb. 6, 1930, measured approximately 8 by 3 cm. This calculus is apparently of a harder nature than those that had been present in the right kidney as no pieces have broken off. There has been no obstruction of the left ureter nor any passage of small calculi. The patient has refused operation on the remaining kidney and in spite of the huge stone in his solitary kidney enjoys fair health some six years after nephrectomy for right sided calculus pyonephrosis.

This case exemplifies the importance of early surgical intervention for stone before renal insufficiency and advanced infection has set in, making the patient a poor surgical risk. It also demonstrates that stones multiple coral-shaped or otherwise, in which fragments separate and pass down the ureter, should be

- 1 Keyser L. D. The Mechanism of the Formation of Urinary Calculi. *Ann. Surg.* 77: 210 (Feb.) 1923.
- 2 Holmes R. J. and Caplan M. M. A Study of the Geographic Incidence of Urolithiasis with Consideration of Etiological Factor. *J. Urol.* 23: 477 (April) 1930.
- 3 Hunner C. L. Calculus of the Upper Urinary Tract Treated by New Methods. *End Results.* *J. Urol.* 20: 61 (July) 1928.
- 4 Burford C. E. Nephroproxy for the Relief of Ureteral Kinks Associated with Ptosis. *J. A. M. A.* 88: 541 (Feb. 19) 1927.
- 5 Ward R. O. Urinary Calculi Composed of Bacteria. *Brit. J. Surg.* 14: 230 (Oct.) 1926.
- 6 Pillet E. Les calculs de la lithase urinaire secondaire sont des mûs microbiens. *Assoc. franc. d'urolog.* XVIII Congrès 1928 p. 551.
- 7 Ward (footnote 5) Pillet (footnote 6).

(35 per cent) was treated by pelvic lavage and the administration of urinary antiseptics. In addition I acidified the urine of patients presenting alkaline stones and alkalinized the urine of patients presenting acid and cystine stones, regulated the diet based on a chemical analysis of the stone found, and limited the patient to distilled water. It was observed that recurrence was greater in kidneys in which it was impossible to relieve the infection.

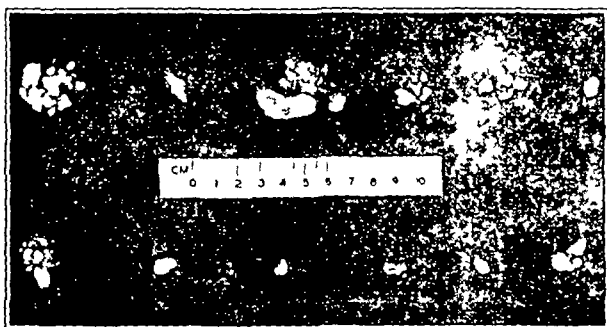


Fig 2 (case 1)—Fragments detached from coral shaped stones in both kidneys either expelled spontaneously or removed through the operating cystoscope

All patients were carefully examined for all possible foci of infection in other parts of the body with specific attention to infections of the skin, tonsils, sinuses and middle ear, teeth and infected genital organs.

As far as I was able I corrected stasis and infection and, further, I deduced that recurrence noted in 20 per cent of the cases was due either to improper surgical technic favoring the leaving of fragments or to an inherent predisposition of the patient to form stone. Although all foci of infection had been removed and renal infection and stasis relieved, the role of faulty metabolism is exemplified by the fact that calculus occurred in the opposite kidney (9 per cent of cases).

PATHOLOGIC EFFECTS OF STONE

It matters little whether infection is directly the cause of stone formation or whether the stone is responsible for infection. If the stone is not removed it may lead to infection of the kidney and by irritation and pressure cause ulcerative necrosis or abscess formation. When it occludes the pelvis or a calyx it may even cause invasion of the parenchyma by infecting organisms resulting in a single abscess or suppurative nephritis more or less destructive to the kidney. If unchecked, the pathologic process extends to the perinephric tissues by way of the lymphatics or by direct invasion giving rise to perinephritis, sclerotic peripyelitis, paranephritis or perinephric abscess. If unrelieved, a perinephric abscess may perforate the diaphragm and invade the lung as was observed in one of my cases in which a lung fistula resulted. The stone or its accompanying infection can act as a focus of stone formation and hematogenous infection of the opposite kidney. The occluding stone often results in hydronephrosis, so commonly observed with thinning of the sac, or less frequently to sclerosis of the pelvis with thickening of the wall and perirenal fat. Stone may also cause spontaneous rupture of the pelvis, as was observed in two of my cases, and renders the kidneys more susceptible to traumatic rupture by reason of the thinning of the pelvic wall due to hydronephrosis.

The constant irritation of the calculus in the kidney sometimes leads to tumor formation. When accom-

panied by streptococcal pyelonephritis it is sometimes a factor in causing invasion of the blood stream, producing septicemia, endocarditis and death. This was observed in two cases presenting this type of infection, in which the calculi were not removed from the kidney.

TREATMENT

In treating kidney stone, the greatest precautions should be taken to conserve renal tissue and to prevent recurrence. These consist of the employment of the proper operative procedure, which is determined by the size, shape and position of the stone and after removal the application of all prophylactic measures against future stone formation. Stones measuring less than 5 mm in diameter can be encouraged to pass into the ureter and bladder by cystoscopic maneuvers. These consist of enlarging the constricted ureteral orifice by meatotomy, progressive dilation of the ureter with catheters and bougies, and the employment of succussion, recently advocated by Bransford Lewis.⁸ Ten per cent of the cases presenting stone, reported in this series, passed into the bladder following these manipulations and were either voided spontaneously or removed with rongeur forceps through the operating cystoscope. When the stone has a greater diameter than 6 mm one should resort to surgical intervention, employing pyelotomy, nephrotomy, pyelonephrotomy or nephrectomy. Operation is particularly contraindicated in the aged. Quiescent, silent, nonobstructing stones in kidneys presenting no infection were left alone. The disintegration of a cystine stone by pelvic lavage with alkaline solutions, recently reported by Crowell,⁹ offers great possibilities of dissolving stones in situ employing either acids or alkalis, based on chemical analysis of the urine and of fragments that might have been passed.



Fig 3—The end result of untreated renal calculi is exemplified by this kidney removed from a woman aged 41 presenting calculous pyelonephrosis in which the organ was entirely destroyed by urea decomposing organisms.

Pyelotomy—This operation has become popular because it is benign, is safe, offers an easy approach, sacrifices little renal tissue, and is unlikely to be followed by hemorrhage. It is ideal for smooth stones situated in any portion of the pelvis and particularly for those which obstruct the ureteropelvic outlet.

⁸ Lewis, Bransford. Stones in the Kidney Pelvis. A Nonoperative Method of Removal with the Aid of the Cystoscope. *J. A. M. A.* 85: 1056 (Oct. 3) 1923.

⁹ Crowell, A. J. Cystine Nephrolithiasis. *J. Urol.* 11: 545 (June) 1924.

Because of its facility, pyelotomy is also applied to pelvic stones, coral-shaped and otherwise which contain single or multiple branches extending into the calices of the kidney. Some surgeons crush these stones and extract or wash away the smaller fragments. Stones situated in the lower, middle or upper calyx can also be located and removed through the pelvic incision. Unfortunately, in performing pyelotomy and particularly when the stone is crushed, one is likely to leave small fragments which will not even show in making a fluoroscopic examination or in taking roentgenograms at the time of the operation, as suggested by Braasch and Carman¹⁰ or by Quinby,¹¹ nor be detected by careful palpation. These fragments are sometimes firmly attached to the stone bed and although infinitesimal in size act as nuclei for future stone formation. In the twenty-two kidneys from which stones were removed by pyelotomy, five recurred (22 per cent), two in the lower

tissue, one should attempt to remove stones by multiple nephrotomy incisions when possible rather than by laying the kidney wide open by one huge incision. Although this operation is more dangerous than pyelotomy, it should be employed when the latter is too difficult.¹² It has the advantage of being followed by fewer recurrences.¹³

Pyelonephrotomy—The combination of pyelotomy and nephrotomy, although not in general use, is ideal for the removal of a calculus situated in a calyx or pelvic

TABLE 1—Incidence According to Sex

Male	44
Female	30
Total	74

TABLE 2—Incidence According to Age

0-10 years	1
10-20 years	4
20-30 years	13
30-40 years	13
40-50 years	13
50-60 years	12
60-70 years	1
70+ years	1
Total	64

TABLE 3—Incidence According to Side Involved

Right	39
Left	28
Bilateral	7
Total	74

TABLE 4—Predisposing Lesions

Pyelonephritis	26
Ureteral stricture	15
Renal abscess	8
Renal ptosis	8
Prostatic hypertrophy	5
Urethral stricture	2
Renal tumor	2
Bifid pelvis and ureter	2
Tuberculosis	2

TABLE 5—Pathologic Effects of Stone

Pyelonephritis	26
Renal abscess	21
Multiple	15
Single	6
Destructive pyonephrosis	19
Hydronephrosis	15
Perinephritis	5
Peripylitis—sclerosis	5
thickening of perirenal fat	4
Ulcerative necrosis	3
Sclerosis of pelvis	3
Perinephric abscess	2
Spontaneous rupture of kidney	2
Renal tumor	2
Streptococic septicemia with endocarditis	2
Lung fistula	1



Fig. 4—Pyelonephrotomy for stone. An incision is made in the pelvis through which the index finger is inserted to support the stone from below. Single or multiple nephrotomy incisions are made with a silver wire after the stones have been located by needling. Prior to operation a catheter is placed in the ureter in order to irrigate the pelvis and to prevent fragments from passing into the ureter.

calyx, two in kidneys presenting a large branched stone that had extended into the calices, and one in the middle calyx.

Nephrolithotomy—This type of intervention is indicated when one encounters an intrarenal type of pelvis. It is more likely to be accompanied by hemorrhage at the time of operation or secondary hemorrhage occurring usually from ten to fourteen days later. It also has the disadvantage of sacrificing a certain amount of renal tissue and gives a poorer approach for removing that portion of the stone extending into the pelvis. The employment of the silver wire which pushes aside the larger ramifications of the renal vessels and severs only the smaller terminal branches reduces the amount of renal tissue destroyed. In order to conserve kidney

stones whose branches extend into one or more calices. It permits one to remove the smaller ramifications through single or multiple nephrotomy incisions and assures extraction of the portion of the stone located in the pelvis. An incision is made in the posterior wall of the pelvis, the finger is inserted, and the stone is palpated and kept in place by firm gentle pressure. At the same time it is located from without by the aid of a small groove director or blunt needle,¹⁴ which acts

10 Braasch W. F. and Carman R. D. Renal Fluoroscopy at the Operating Table. J. A. M. A. 73: 1751 (Dec. 6) 1919.

11 Quinby W. C. Operative Treatment of Renal and Ureteral Calculi. J. Urol. 11: 539 (June) 1924. A Note on the Localization of Renal Calculi by the Aid of X-Ray Films Made During Operation. J. Urol. 13: 59 (Jan.) 1925.

12 Van Cappellen. Resultats éloignes des opérations contre la lithiase rénale. Sec. Cong. della Soc. Internaz. de Urol. Rome 1924 p. 303.

13 Rafin M. Resultats éloignes des interventions pour lithiase rénale. Sec. Cong. della Soc. Internaz. de Urol. Rome 1924 p. 283.

14 Burns J. E. A New Method for Locating Small Calculi in the Kidney at Operation. J. Urol. 1: 559 (Dec.) 1917.

as a guide for opening the parenchyma with a silver wire. The stone is then extracted with forceps or pushed out from its bed by the finger below. In this manner there is less likelihood of losing the stone or of breaking off or leaving fragments.

TABLE 6—Type of Stone with Location in Kidney

Pelvis (more or less smooth variety)	24
Multiple	10
Lower calix	10
Bilateral	8
Coral shaped involving pelvis and calices	7
Irregular faceted	5
Upper calix	5
Middle calix	5
Total	74

TABLE 7—Result of Examination

Clinical roentgenographic examination positive	70
Clinical roentgenographic examination negative	4
Confirmed at operation	2
(870 renal operations in which kidney palpated)	
Confirmed by passing stone	2
Total	74

TABLE 8—Enumeration of Cases with Type of Operation

Pyelotomy	22
Nephrectomy	19
Pyelolithotomy	11
Nephrolithotomy	8
Passed after cystoscopic maneuvers	7
Ureteronephrectomy (coexistent ureteral stone)	6
Passed after succussion	1
Total	74
Renal exploration with failure to find stone	4
Calcified cortical abscess	2
Calcified glands	1
Calcified blood vessels	1

TABLE 9—Coincident Corrective Operation

Nephropexy	8
Decapsulation	5
Resection of aberrant vessel	5
Plastic operation on pelvis	3

TABLE 10—Postoperative Management*

1	Clearing up of foci of infection in skin, tonsils, teeth, sinuses, ear, genital organs in men and women, etc.
2	Clearing up of stasis in upper and lower urinary tract
3	Clearing up of chronic pyelonephritis
4	Regimen: Diet based on chemical analysis of stone; Intake of distilled water only
5	Subsequent examination of patient: Roentgenograms of urinary tract every three to six months; Monthly complete urinalysis

TABLE 11—Recurrence of Stone

	Number of Cases	Per Cent
After pyelotomy (22 cases)	5	22
After nephrotomy (11 cases)	2	18
After pyelonephrectomy (8 cases)	1	1
After passage following cystoscopic maneuvers (7 cases)	2	28
In opposite kidney after nephrectomy (19 cases)	6	31
Total recurrence after all methods of treatment	16	20
Mortality	2	2.7

At the time of operation faulty drainage should be corrected; the ptotic kidney should be anchored to the last rib by nephropexy. When not too large anomalous vessels obstructing the ureteropelvic junction should be resected and anastomosis and other constrictions of the ureteropelvic outlet corrected by the proper plastic operation. Coincident abscesses should be drained and in certain cases of advanced infection a

rubber drain tube is inserted into the pelvis and brought out through the parenchyma of the kidney for the purpose of lavage. During the operation, fragments are likely to pass down the ureter and cause subsequent trouble. This is prevented by passing a large ureteral catheter into the pelvis prior to intervention. It facilitates location of the upper portion of the ureter, allows one to make a constant lavage of the pelvis with a mild antiseptic solution and to wash away small fragments. It assures ureteral drainage after the operation.

It is today acknowledged that large coral-shaped, silent, nonobstructing stones should be left alone. In certain coral-shaped stones, however, fragments break off, pass into the pelvis and ureter and may be arrested at the ureteropelvic junction or along the ureter. The resulting obstruction leads to backpressure and in the event of chronic pyelonephritis may cause invasion of



Fig. 5—A stone is either pushed away from its bed or removed with forceps. Counterpressure by the finger assures more complete removal of the stone and less likelihood of leaving fragments.

the cortex, ending in suppurative nephritis which partially or completely destroys the kidney. I have observed this type of coral-shaped stone in five patients. In one the kidney was completely destroyed and the patient's life was saved by prompt nephrectomy. In the second case, impaction of the stone caused rupture of the kidney necessitating immediate intervention. In the third, a fragment obstructing the ureteropelvic junction was responsible for the formation of multiple cortical abscesses accompanied by a huge perinephric abscess. In the fourth, the coral-shaped stone occurred in a patient possessing a solitary kidney and the destruction of this organ by multiple abscesses resulted in death. In the fifth, a fragment obstructed the ureteropelvic junction, causing complete blockage. The other kidney had been destroyed by a pyonephrotic process and as the patient refused operation she rapidly went into uremia and died. If a patient presenting coral-shaped stone of one or both kidneys gives a history of passing fragments operative intervention should be instituted at once. The early removal of this type of stone

assures elimination of urine and conservation of renal tissue. In addition, the patient is surely a better risk than at a later date, at which time advanced infection or renal insufficiency will have taken place. If the stone recurs, it can again be removed. I successfully performed three consecutive operations for this type of recurring coral-shaped stone with relatively little damage to the functioning power of the kidney.

OPERATION ON SOLITARY KIDNEY

In removing stones from the solitary kidney due to congenital deformity, or disease, or surgical removal of its fellow, drainage of the urine from the kidney must be assured at all times and the technic exacting. A wider incision assuring good exposure should be made, sacrificing the twelfth rib when necessary, extreme gentleness should be employed in handling the kidney, and blood vessels should not be sacrificed. The pyelotomy incision should not be sutured in order to assure good drainage of urine. Decapsulation should be made to avoid postoperative congestion. Partial



Fig. 6—After the nephrotomy incision has been closed by mattress sutures partial decapsulation is performed in order to minimize post operative congestion. The capsule is separated for a slight distance only and allowed to remain on the convex surface. This facilitates subsequent operative approach of the kidney. The pyelotomy incision is not sutured in solitary kidney.

decapsulation is performed in such a manner as to assure the minimum amount of kidney surface adhering to the surrounding structures and facilitates surgical approach if it becomes necessary to operate on the kidney at a future date. This is accomplished by incising the capsule longitudinally, bluntly stripping it from the kidney with the finger for a slight distance only, and replacing the capsule on the convex surface of the kidney (fig. 5).

Nephrectomy—In individuals prone to stone formation, early nephrectomy for destructive calculous pyonephrosis removes the focus of infection, which is often the cause of subsequent infection and stone formation in the opposite kidney.¹⁵ It is realized that the kidney has a remarkable regenerative power and it is not sacrificed when there is reason to believe that

the function might return after the removal of the obstructing calculus. When multiple abscesses are encountered and when the kidney is nothing more than a sac of pus or a bag of stones, it should be removed. It is often hard to measure the amount of destruction present and to ascertain the recuperative power of the kidney. Nephrectomy is particularly indicated when there is advanced unilateral infection with urea decomposing organisms.¹⁶ In cases presenting coincidental calculi of the lower ureter, a complete ureteronephrectomy should be performed. These calculi prevent atrophy of the ureter, cause attacks of pain, and in many instances are responsible for persistence of infection in the bladder, which in turn might extend to and involve the remaining kidney. In two cases in which the kidney had been previously removed by other surgeons, it was found necessary to remove the lower ureter containing stones because of persistent pain and cystitis.

After-Care—A roentgenogram should be made before the patient leaves the hospital to assure oneself that all fragments have been removed. The patient sometimes passes fragments following the operation. A routine roentgenogram of the entire urinary tract should be made every three to six months and the urine carefully analyzed for pus and blood, the presence of which points to infection with or without stone. The finding of macroscopic or microscopic blood usually indicates recurrence of stone.

SUMMARY

1 The modern management of kidney stone includes many prophylactic measures, viz, early nephrectomy for destructive calculous pyonephrosis which might act as a focus for stone formation in its healthy fellow, the clearing up of foci in other parts of the body, the elimination of predisposing lesions consisting of stasis in the upper and lower urinary tract, the eradication of renal infection, and the correction of faulty metabolism with a diet based on a chemical analysis of the recovered stone.

2 Obstructive stones cause backpressure, resulting in certain pathologic lesions, viz, hydronephrosis, suppurative nephritis, abscess formation, perinephric abscess and spontaneous rupture of the kidney. Non-obstructive stones are a source of continual irritation to the kidney, lowering its resistance and making it more susceptible to tumor formation and to infection. Early removal of nonobstructive stones as well as the obstructive type conserves renal tissue and lengthens life.

3 The so-called nonsurgical, coral-shaped, silent, nonobstructing stone in which fragments break off, pass into the pelvis and ureter threatening obstruction, should be removed at once.

4 Recurrence of stone occurred in 20 per cent of the seventy-four cases treated. As all predisposing lesions such as stasis, renal infection and foci of infection elsewhere were systematically corrected, it might be deduced that recurrence was due to faulty metabolism or to the leaving of fragments at the time of operation. Recurrence after operation (19.7 per cent) can be further reduced by the employment of x-rays at the time of the intervention and by the intelligent selection of the proper type of operation based on the position and character of the stone. Nephropylotomy assures a more thorough removal of branched pelvic stones and stones in the calyces.

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15 Nicholich G. Sur la nephrolithiase bilaterale. Assn. franc. d'urolog. 14 510 1910. Rossing C. V. On the Signification of Infection for Recurrence After Kidney Stone Operations. See Cong. della Soc. Internaz. de Urol. Rome 1924 269. Ilorge V. Operations pour lithiase reno-ureterale. See Cong. della Soc. Internaz. de Urol. Rome 1924 p. 253.

16 Rossing (footnote 15).

ABSTRACT OF DISCUSSION

DR A H PLACOCK, Seattle The study of renal calculus opens up at once an interesting question, for every stone is a problem by itself. I do not think that any rule can be laid down from experience that will apply to all cases. However, there are certain particular symptoms in these cases and there are certain broad considerations one could follow that are of great assistance. We are not infrequently called to see these patients and to give advice, and I think our advice should be a matter of judgment and experience. We should be influenced first of all by the size of the stone. I think we all realize that the small stone frequently will pass on into the bladder and be expelled in the natural way. Stones over 1 cm., in my experience, will not do this but the smaller stones will often pass on, perhaps with some manipulation of the ureter, and be voided through natural channels, thus offsetting a serious operation. On the other hand, I have seen some serious complications following the too frequent use of the transvesical manipulation of the ureter in an attempt to dislodge a stone. Even when the stone is finally passed, the infection resulting from manipulation has persisted for months in some instances. I think that manipulation of stones in the ureter is not advisable and believe that they should be removed by surgery if they show no tendency to pass on. The indications for surgery in my experience have been, first of all, infection. These cases which have become infected will not clear up and the earlier the stones are removed the better. The second thing is hematuria. This is often quite severe, especially in the polycystic kidney. Another thing is tenderness and pain, continuous in nature. Often these patients will have an attack of renal colic, recover from it and not have another for six months or a year. On the other hand, some patients will have repeated attacks of pain occurring at short intervals, and I do not think that these patients should be worn out by repeated attacks of colic without some surgical relief. Another indication for surgery, to my mind, is impaired unilateral function, proved by pyelogram and chemical tests showing that destruction of the kidney is going on. In the contraindications, I think that first of all comes the silent stone. I do not mean the type that Dr Mathe mentioned for that was not silent, but the type with which there are practically no symptoms and no evidence of urinary infection and the stone that is found through a general examination.

DR WILLIAM F BRAESCH, Rochester, Minn. The silent renal stone is one of the most interesting conditions to be considered. It is often quite a problem to decide whether or not to operate on a stone that is causing no symptoms. The more experience I have the more am I inclined to advise operation in every case, unless there is some definite reason against it. Because of age coincident complication, the possibility of spontaneous passage or because the stone is too large to attempt removal I might not wish to advise operation. It is usually advisable in such cases to keep the patient under observation and watch the increase in the size of the stone by repeated roentgen examinations. These stones may be silent so far as subjective symptoms are concerned but they are never silent in their injurious effect on renal tissue and usually cause destruction of the kidney. I was much interested in the various etiologic factors that Dr Mathe pointed out, and particularly in the large percentage of cases in which he found ureteral stricture to be an apparent cause. It is quite as difficult to say whether a stricture found at operation is primary or secondary as it is to determine its presence clinically. Renal or ureteral stone is so often found without any evidence whatever of stricture that it can hardly be a common etiologic factor. Furthermore, when one considers that over 90 per cent of the patients operated on for stone in the ureter or kidney did not have a recurrence and thus in spite of no treatment for a supposed stricture one must infer that stricture cannot be of much etiologic importance. Primary renal infection is not a frequent cause of lithiasis. Chronic pyelonephritis is of common occurrence but is only occasionally complicated by secondary stone. When stone does occur with primary chronic pyelonephritis it is usually small and of little clinical importance and surgical treatment is usually not indicated. Should however the stone cause pain or should there be an increase in size and infection it would be advisable to remove it. True pyonephrosis is not a common finding with renal stone although diffuse pyelonephritis is often observed.

It would be reasonable to assume that the pyonephrosis is the result rather than the cause. Infected hydronephrosis, which is often called pyonephrosis, is observed more frequently and may be either primary or secondary. When the hydronephrosis is large, say from 150 to 200 cc, it is usually primary and the stone is of secondary formation. Renal ptosis has been regarded by some observers as a frequent cause of stone. Considering the many cases of ptosis that are seen without lithiasis, one might question whether ptosis is ever an etiologic factor. I have always regarded ptosis as a coincident finding, rather than as a primary factor.

DR FREDERICK T LAU, New York. The story of urinary calculi is so broad, so interesting and so well understood that I would like to mention just one feature of Dr Mathe's paper that I greatly enjoyed—the subject of recurrence. I think that in the light of present day knowledge there are too many recurrences. I think that if one takes into consideration the points of stasis, infection and the chemical composition of the stone there will be fewer recurrences. No one will dispute the fact that stasis is the cause of stone primarily, and it is the cause of recurrence. Stasis in the course of infection causes an excess precipitation of salts in the urine. It is known, too, that the majority of stones that recur are of alkaline rather than of acid composition, and if one analyzes the chemical composition of each stone removed at operation and governs the chemical reaction of the urine according to the result of the chemical reaction of the stone, one discourages in that way the possibility of recurrence. If the stone is acid the urine should be kept alkaline, and if it is alkaline the urine should be kept acid. I had the privilege of reporting a series of cases six years ago in Chicago. The statistics in New York are about the same now as they were then. I spoke of one case at that time which I wish to mention now to bring out the points I wish to emphasize regarding recurrence. This patient prior to being seen by me, had had four operations. After she came under my observation she had three operations for continued recurrences of calculi, the earliest being three months and the last three years. When I reported her case in Chicago, in 1924, she had had the last one, in January of that year, and I am happy to report now that there has been no return of calculi since then. Her urine is alkaline, her stone is acid. She carries litmus paper with her and tests her urine regularly. At one time she got a little acidosis but has learned to be on guard. I am glad Dr Mathe reported so few nephrectomies. I think that physicians are learning to be more conservative and not to sacrifice a kidney unnecessarily.

DR ROBERT H HERBST, Chicago. I would like to emphasize the value of renal resection in the treatment of stone in the kidney. This procedure is particularly useful in polycystic stones that have produced cavities or dilatation of one or more calices also when such stones have produced a localized infection. In these cases the incidence of recurrence is high following simple removal while resection leaves a healthy functioning segment with little or no danger of recurrence. The deferred popularity of this method of treatment is due to the unwarranted fear of postoperative hemorrhage and leakage of urine. I recently carried out a study on dogs resecting a V shaped segment of the kidney. In practically every instance in which the capsule was first stripped back and then drawn over the cut end followed by the introduction of mattress sutures postoperative hemorrhage did not occur. The puckered capsule hung under the sutures is of undoubted value in the control of bleeding. Leakage will not occur from a pelvis that is draining normally. I opened a calyx or the main pelvis in all these experiments and never saw any leakage, in many I did not even suture the lining of the pelvis. Another point is the use of the indwelling ureteral catheter in the preoperative treatment of calculous pyonephrosis. A fair number of these very sick patients can be greatly improved by such drainage and an infected case converted into a fairly clean one thereby greatly reducing operative risk and at times saving a kidney that might require removal without such preoperative drainage.

DR B S BARRINGER, New York. I wish to congratulate Dr Mathe on his able paper and to say one word about the value of the roentgenogram on the table of the kidney from which a physician thinks he has removed all the stones. I think many have not done that for they think it a difficult procedure.

They can take a small x-ray film and wrap it up in a towel. It is valuable because it checks up whether all the stones have been removed or not. I think that this procedure makes one more careful, more accurate and more delicate in removing these multiple stones. I do not do it as a routine, but I do it in those cases in which I expect trouble, and I think that it has a great advantage over the fluoroscopic method, in that it is more simple and one has a permanent record of the case for one's files. It is not difficult with a small portable x-ray machine.

DR WILLIAM E. KEANE, Detroit. I think the use of the Cault scissor incisor with the bipolar current may be an advance in dislodging some of the stones that are stuck just inside the ureteral orifice. During the past year I have been successful with this method in assisting stones to pass in two such cases in which attempts by all other methods had failed. The platinum blade sears a slit in the ureteral orifice and there is no bleeding to worry about. I think that there are cases in which this method is of decided value and it can be used to advantage when indicated.

DR ARTHUR L. CHUTE, Boston. I wish to offer a word of protest about watching urinary stones for too long a time. I think it should be concluded that a stone in a kidney should not be allowed to remain indefinitely. If it will remove itself in a reasonable time, well and good; but if not it should be removed. I do not mean that all small stones should be removed the moment they are recognized. I think, in fact, that they should not. The very small stones, 1 or 2 mm in diameter, will almost certainly be passed and that opportunity should be given, but when there is a stone of any real size it is another story. The mere fact that it is known that in about 20 to 25 per cent of stone cases there will sooner or later be a stone in the other kidney should cause one to go ahead and remove a renal stone of any size, if possible before the kidney becomes infected. The fact that this tendency to formation of stones is something more than a local condition should result in their removal if they are not passed within a reasonable time. There seems, for some reason, to be a great fear of opening a kidney through its cortex for the removal of a stone. That, however, seems to me to be the logical route to follow in the removal of large stones in the calices and in the case of stone-bearing kidneys that are more or less dilated. In cases of this sort I think the logical thing to do is to make a sufficient incision through the kidney cortex, remove the stone and fix in a drainage tube. I do not mean that one should operate for a very small stone in a kidney or for one that is coming down to the ureter with reasonably free drainage. I have on a few occasions tried to remove very small renal stones but have found that this is not advisable since I have so injured one or two kidneys by a fruitless search for a small renal stone that I have had to remove them. However, the leaving of larger renal stones in the face of the fact that they are almost sure to destroy the kidney in time, and that stones will appear on the other side in one case in every four or five, is a doubtful procedure.

DR HERMAN L. KRETSCHMER, Chicago. It has been assumed for a long time that stasis and infection play a role not only with the formation of stone but also in connection with recurrences. Most physicians advise pyelotomies when this operation can be done, and also resections of the lower pole when there are evidences of dilatation and stasis, and regardless of these precautions, many of these patients go merrily on and have their recurrences. I was interested in hearing Dr. Braasch say that they have had more recurrences in cases in which pyelotomies were done. I have made it a rule to clear up the infection following the removal of the stone by means of pelvic lavage with silver nitrate, and yet in spite of these various procedures, some of the patients continue to have their recurrences. The problem of recurrences in kidney stone surgery is a big one deserving much careful study and much thought. One point that has not been emphasized in this discussion is the possible role that the kidney cell itself may play. I believe that there are some disturbances of metabolism or function in the kidney cell proper and that this is a factor in a certain number of instances in resulting recurrences.

DR. CHARLES P. MATHE, San Francisco. Dr. Edmond Papin has asked me to give his discussion. He recently saw a patient

whose case emphasizes the necessity of a thorough urologic examination in all patients presenting persistent pyuria. The patient had the clinical signs and symptoms of unilateral renal tuberculosis. In making the routine roentgenogram a silent stone was discovered in the opposite, uninfected kidney. Before removing the tuberculous kidney he removed the stone from its fellow by pyelotomy, thereby assuring free drainage of urine after the operation. In operating on silent stones, I feel that one should be guided by the same sound judgment that one employs in operating on kidneys in general. Operation is particularly contraindicated in those presenting advanced bilateral stone formation when there is severe infection and in the aged. In regard to cystoscopic maneuvers made in order to encourage stones to pass, I agree that it is unwise to expect a stone measuring 1 cm to pass through the ureter, in which the diameter rarely exceeds 0.5 cm. Every stone measuring more than 0.6 cm should be removed by operation. Heminephrectomy has not been sufficiently emphasized. After witnessing the beautiful demonstration of partial resection of the kidney for stone with infection performed by Professors Papin and von Lichtenberg before the recent meeting of the American Urological Association in New York, I am further convinced of the value of this operation. Dr. W. E. Stevens of San Francisco has also successfully used this procedure. This operation assures removal of the stone as well as of the diseased portion of the kidney in which as Dr. Kretschmer has pointed out, the renal cells are often at fault thereby playing a role in the formation and recurrence of stone. I fully agree that preoperative care is very important. One attempts to lower the amount of infection by all the modern methods at one's command, including continual ureteral catheter drainage and repeated renal lavage. Recurrence should be combated energetically. I recall a patient in whom a stone recurred after three successive nephrolithotomies. Because of this a minute examination of the urine was made and its reaction changed by placing the patient on an acid. The stone has not recurred.

RADIATION THERAPY IN CANCER OF THE MOUTH

WITH ESPECIAL REFERENCE TO THE USE OF
PURE GAMMA RAYS*

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AND

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PHILADELPHIA

The fact that the British government has recently purchased 20 Gm of radium, that New York State is to add 4 Gm to its present holdings and that many institutions devoted entirely to the treatment of cancer, such as the Radium Institute in Paris, the Radiumhemmet in Stockholm and the Memorial Hospital in New York depend in great part on radium for their results, indicates definitely the recognition of the value of irradiation in the treatment of cancer. The greatest fields of usefulness, however, have been in cancer of the skin, the mouth or the uterus.

We believe that most cancers of the mouth can be prevented by eliminating all forms of irritation, such as come from tobacco, jagged or sharp edged teeth, infected gums, badly fitting plates or foreign bodies, and by eliminating syphilis.

The best time to cure cancer, even by irradiation, is in its earliest stages. Accurate and early diagnosis is therefore a most important factor. Cancer of the

* Because of lack of space this article is abbreviated in THE JOURNAL by the omission of an illustration. The complete article appears in the authors' reprints.

* Read before the Section on Radiology at the Eighty First Annual Session of the American Medical Association, Detroit, June 25, 1930 and associated with an exhibit of casts, drawings, materials and lantern slides in the Scientific Exhibit; therefore few illustrations of the technique are being published.

mouth nearly always gives some symptom that should attract the patient's attention early. Any lesion in the mouth can be easily seen and palpated. Therefore, if the patient and the physician are alert, there is no good excuse for not diagnosing cancer in its earliest stages. Better still, the lesions preceding cancer should be diagnosed and, if they are properly treated, many cancers

warty and ulcerated. At this later stage it is usually cancerous. This leukoplakia is most commonly found in those who use tobacco excessively, either smoking or chewing, and it occurs especially when there is some associated local irritation from a jagged or sharp edged tooth or badly fitting plate. This preliminary condition can be corrected by eliminating tobacco and the irritation, using an alkaline mouth wash, and if necessary by skilful destruction by electrocoagulation. If there is thought of cancer, a section should be removed for microscopic examination and in addition the area should be treated locally within radium at once, while waiting for the report. We have never seen any ill effects from the removal of a specimen, provided the area is treated immediately before or immediately after the biopsy. The danger from a biopsy results from the delay in treatment, and the growth is increased as a result of the increased blood supply that follows nature's method of repair.

At times an irritation ulcer is present, resulting from some jagged or sharp edged tooth or badly fitting plate. These ulcers, if found early, may disappear after the simple removal of the irritation, or they may become indurated and definitely malignant. One must think of cancer when there is no tendency to heal after two weeks.

A papilloma may develop from one cause or another, which in turn may be subjected to traumatism and then become malignant. For this reason we believe in the prompt destruction by electrocoagulation of any such lesion as soon as it is demonstrated, doing a biopsy if there is thought of a malignant condition.

Local induration of the tongue must be viewed with suspicion and kept under close observation. Malignant disease beginning in this manner is always the most difficult to diagnose, and the greatest clinical experience should be utilized.

Cancer of the lip, in which cures are obtained in practically all cases if treated at the beginning, will not be discussed in this paper.

THE USE OF PURE GAMMA RADIATION

We have obtained some rather brilliant results in the past with electrocoagulation, insertion of radium needles, and combinations of these with surgery, but for the most part the ultimate results have been disappointing, and even those patients who were cured went through much suffering and distress. Acting on the biologic principles of irradiation laid down by Regaud, we increased our filtration and prolonged the application of radiation. The end-results were so much superior to the former results obtained that we have adopted this method as a routine. We presented the matter after invitation of the British Empire Cancer Commission before the International Conference on Cancer held in London in July, 1928,¹ and discussed it further before the American Radium Society in 1929.² Later, while visiting the Radiumhemmet in Stockholm and the Curie Institute in Paris, we found that practically the same methods were being used and with similar results.

This improved technique is based on two fundamental principles laid down by Regaud. He recommends that

Fig 1 (case 1)—F. P. P., a man aged 43 referred by Dr. S. Irwin Darnall, Sept. 26, 1927, with recurrent carcinoma involving 2 1/2 inches of the right lower jaw and producing a mass of tumor about the size of half a hen's egg and associated with destruction of the jaw bone below the inferior dental canal. A, before treatment; B, June 9, 1928, showing area completely healed; C, Oct. 13, 1928, showing that the results have been accomplished without any damage to the skin.

can be prevented. We believe that most cancers of the mouth evolve from some preceding, slowly developing lesion.

There may be white patches or a general whiteness of the mucous membrane, which is almost transparent at the beginning and later this may become thickened,

1 Pfahler, G. E. Pure Gamma Radiation in the Treatment of Carcinoma of the Buccal Cavity. Proceedings of the International Conference on Cancer, July 16 to 22, 1928, published by the British Empire Cancer Campaign, London.

2 Pfahler, G. E. Improved Technique for the Use of Highly Filtered Gamma Rays in the Treatment of Cancer of the Mouth. Proceedings of the American Radium Society at its Annual Meeting, Portland, Ore., July 7 and 8, 1929.

Regaud, C. Some Biological Aspects of the Radiation Therapy of Cancer. *Am. J. Roentgenol.* 1: 9 (Aug.) 1924.

irradiation be prolonged so as to destroy all the cancer cells in the process of division, and says, "It is useless to expect to kill all the cells of a squamous cell cancer, it is sufficient to kill the mother cells, the others, which form practically the whole mass, disappear gradually by transformation and resorption." His idea, therefore, is that a moderate amount of irradiation continued over a considerable time is better than a great amount of irradiation given in a short time. His second principle is indicated by the following "As the radiation becomes more penetrating, the diffuse necrotizing effects diminish, then practically disappear, and finally only the selective effects remain, which are manifested in the most radiosensitive cells, which are the cancer cells

tion effects up to the limit of normal tissue tolerance for a considerable time. Regaud says

When radium punctures was first begun it was thought that it might become the method of choice in the majority of cancers. Instead its use has been greatly restricted so that at present it is employed only for cancer of the tongue and a few times for thick exuberant cancers of the skin.

Since using the method here described, we have had much more satisfactory results, with almost no damage to the normal tissues. We believe that by eliminating the fear of operation and the fear of mutilation one will do much to prevent the delay that now occurs in the proper treatment of cancer of the mouth.

GENERAL TECHNIC

For general surface applications, as a rule, we use the beeswax and hard wood powder compound that was developed at the Radium Institute in Paris by Esquerra, Monod and Richard.⁶ We use 1 pound of beeswax, 1 pound of paraffin and 2 ounces of hard wood powder. As a rule, from 1 to 2 cm in thickness is sufficient, and the additional thickness and distance are obtained by the use of felt. At the Paris Institute, blocks of cork are used to add thickness. The wax compound is melted and molded into plaques 15 by 33 cm and 1 or 2 cm in thickness. For use, this wax is softened in hot water and then molded to the part to be treated and fixed by dipping in cold water. It is then built up to the desired thickness of from 4 to 5 cm by means of felt. The outer surface is then covered with adhesive plaster, having the sticky surface outward. The radium units are then placed as desired and held in place by strips of adhesive plaster. The radium is distributed over the surface in 5 or 10 mg units according to the location of the disease and the effects to be produced. We usually employ from 100 to 300 mg on these packs. The adhesive plaster is softened and removed, when desired, by means of carbon tetrachloride.

These wax molds are applied externally and permit the preparation of the radium packs for treatment of cases of the mouth with the least amount of exposure of the technician, they can be quickly applied and thus reduce the exposure of the radiologist, and they are molded to the part, so that they will remain in place, and the radium will always be at a constant distance. The packs are held in place by bandages and adhesive plaster. The packs have the disadvantage of being rather heavy. The weight can be reduced by using gold or platinum for filtration instead of brass or lead, but that also increases the cost. Whenever it is practical we use felt alone and omit the wax, which also reduces the weight, but it is applicable only when the surface of application is rather flat and the area over which the radium is to be applied is small.

Generally, we apply the radium to both sides because of the great tendency for cancer of the mouth (even cancer of the cheek) to spread to the opposite side. The chief object of these packs is to prevent or eliminate the metastases and in our hands they have been effectual. We usually use from 150 to 200 mg to the affected side and from 50 to 100 to the opposite side, arranging it so that on the affected side we center on the most likely region of lymphatic extension.

By means of these packs, we commonly use from 20,000 to 50,000 milligram hours of radium element irradiation.

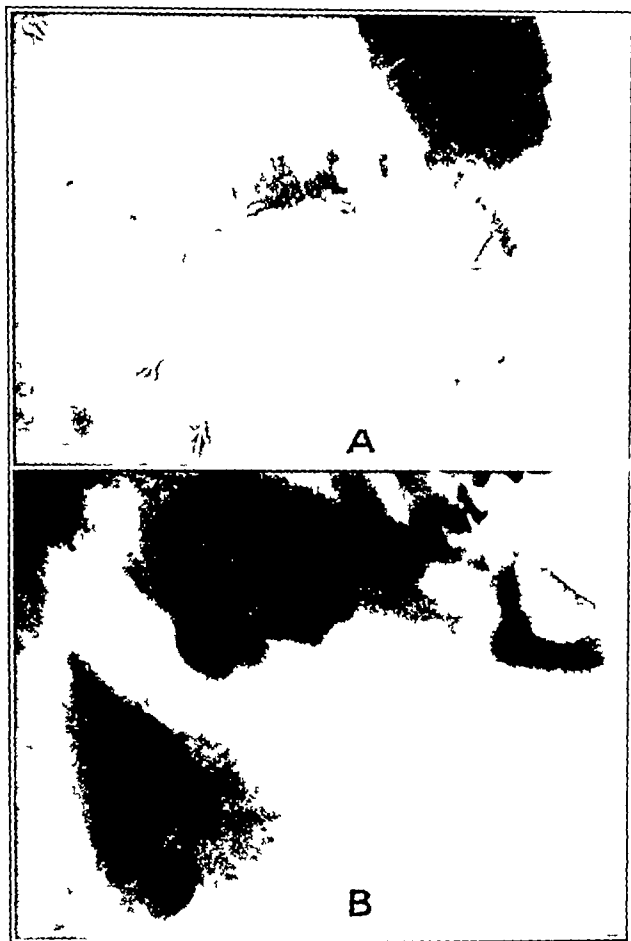


Fig. 2 (case 1)—Condition of jaw bone. A Sept. 26 1927 showing involvement. B April 6 1929 showing healthy condition of the bone. The patient has remained well to date. It had been thought previously that when the bone was invaded the patient could not recover by irradiation.

in the process of division." So far as we are aware, we were the first to carry these two principles to such a high degree, namely, the filtration of rays from the radium through the equivalent of 3 or 4 mm of lead and the prolongation of the effect during three or four weeks' time. In this way one also combines the principles of the "saturation method" by keeping the radium

4. Regaud C. Radium Therapy of Cancer at the Radium Institute of Paris. *Am J Roentgenol* 21: 24 (Jan.) 1929.
5. Pfahler G. E. The Saturation Method in Roentgentherapy as Applied to Deep Seated Malignant Disease. *Brit J Radiol* 31: 45-58 (Feb.) 1926. Further Observations on the Saturation Method in Roentgen Therapy as Applied to Deep Seated Malignant Disease. *Am J Roentgenol* 20: 233-241 (Sept.) 1928. Pfahler G. E. and Widmann B. P. Further Observations on the Use of the Saturation Method of Radiation Therapy in Deep Seated Malignant Disease with Some Statistics. *Radiology* September 1928. *Strahlentherapie* 32: 91 (March 23) 1929.

6. Esquerra A. Monod C. and Richard G. Generalites sur l'emploi des substances plastiques en curietherapie de surface. *J de radiol et d'electrol* 6: 331-341 1922.

diation in surface application, externally, at a distance of 4 cm. We have found that under these circumstances we can give as our limit about 24,000 mg. hours within two weeks and usually 36,000 within three or four weeks. In this way we obtain and keep a deep erythema of the skin and this is followed by desquamation of the epidermis. We must, of course, use more radiation in an advanced case than in an early case. This is a matter chiefly of clinical judgment. We aim to give the radium treatment which we can plan in advance during a period of from three to four weeks. During this period we give from 1,000 to 3,000 mg. hours on the inside of the mouth and we interpose these local treatments between the periods when the radium packs are being used.

For applications inside the mouth, one must improvise appliances continually to suit the individual case, so arranged that they will direct the radiation to the best advantage into the diseased tissues and at the same time protect the healthy tissue. Ready made equipment will not meet the variable needs. For this purpose, we use curved metal tubes to hold capsules against the pharynx, tonsil and posterior surface of the tongue. At times one can use a tonsil clamp. Lead of one-eighth inch thickness can be cut and bent into the form of clasps, as recommended by Grier,⁷ to hold the radium in place, or dental compound may be used to make molds, as recommended by Edling.⁸ Skill in the making of the applications is an important factor in the ultimate success. In all instances, the radium capsules and metal holders used inside the mouth must be protected by rubber or damage will be done by the secondary radiation from the metal. For this purpose we have found vulcanizing rubber to be the most practical and the most easily managed. We have been using this for about twelve years. We do not know of its having been mentioned previously.

Cancer of the mouth cannot be treated by rule. Each case is an individual problem. In the scientific exhibit we have shown examples of our methods and of the results obtained, but no two cases are alike and no two are treated alike.

Our best results have been obtained by surface applications on the inside as well as on the outside, but when the disease is of long duration or when there have been previous treatments and scar tissue formation, the induration does not always disappear, and one cannot be satisfied until it has disappeared. After preliminary irradiation we sometimes remove these areas by electrothermic methods, or we insert radium needles, or it may be well to do a local excision.

When we use radium needles, we prefer iridioplatinum of the filter value equivalent to 1 mm. of lead. We at times use 10 mg. needles or 5 mg. needles with half this filter value. These are left in place from six to twelve hours, but when steel needles (0.4 mm. walls) are used they cannot be left in place more than from three to five hours unless a local necrosis is desired. With needles and with electrocoagulation we sometimes get troublesome sloughing. We make it a rule to apply surface applications at least by packs, within a week after the needling because of the associated congestion which follows needling and which may favor growth by increasing the blood supply to any cancer cells that may have been left living.

RESULTS OF PURE GAMMA RADIATION

As a result of the application of radium element applied locally in the mouth, with a filtration of at least 1 mm. of platinum and of 2 mm. when the space will permit (which eliminates about 14 per cent of the softer gamma rays) we may expect a disappearance of the local growth in nearly all instances. This effect has the following requirements:

- 1 The lesion must be attacked from as many angles as possible and at a distance of from 3 to 6 mm.

- 2 The effect must be continued over a period of about three weeks.

- 3 It is carried to the extent of making the local mucous membrane white, and at times to desquamate.

- 4 The normal tissue must be protected as much as possible by 3 mm. of lead covered with rubber.



Fig. 3 (case 2).—H. W., a man aged 64, referred by Dr. J. Fred Wagner, Nov. 24, 1924, with carcinoma involving the entire right upper alveolar process with destruction of the floor of the antrum. *A*, before treatment; *B*, showing the lesion entirely healed by irradiation, May 15, 1925. The patient is still well.

5 When there has been previous treatment and much fibrous or scar tissue, the area must be excised (after preliminary irradiation) or radium needles must be inserted. Such hard or fibrous lesions never give as satisfactory results as a recent or untreated case.

Epithelioma developing on the basis of leukoplakia may have to be destroyed by electrocoagulation. In leukoplakia, other lesions are likely to develop at some other part of the mouth long after the original lesion has been well. Such lesions have all the appearances of new lesions but because of previous irradiation are more radio resistant, therefore a case of leukoplakia must be kept under observation and in all cancers of the mouth tobacco in any form should be prohibited.

⁷ Crier, C. W. The Treatment of Malignant Diseases in the Mouth. *Am. J. Roentgenol.* 12: 347-352 (Oct.) 1924.
⁸ Edling, I. On Plastic Means of Application in Radium Therapy. *Acta Radiologica* 1: 60-2: 219, 1921.

In cancers of the mouth treated in this manner there is never any mutilation or destruction of the tissues other than what was destroyed by the cancer.

Dryness of the mouth is a common result of the heavy external irradiation in some of the cases, but this symptom usually disappears after several months, as the salivary glands recover.

We have treated by this method during the past six years 111 cases of intra-oral cancer. This analysis includes only intra-oral cases treated since May 1, 1924. It does not include cancer of the lip or those intra-oral cases treated by other methods before or during the early development of this technique. During this time our technique has been gradually developed and therefore in the earlier cases we think the results were not as good as those treated more recently, so far as cure

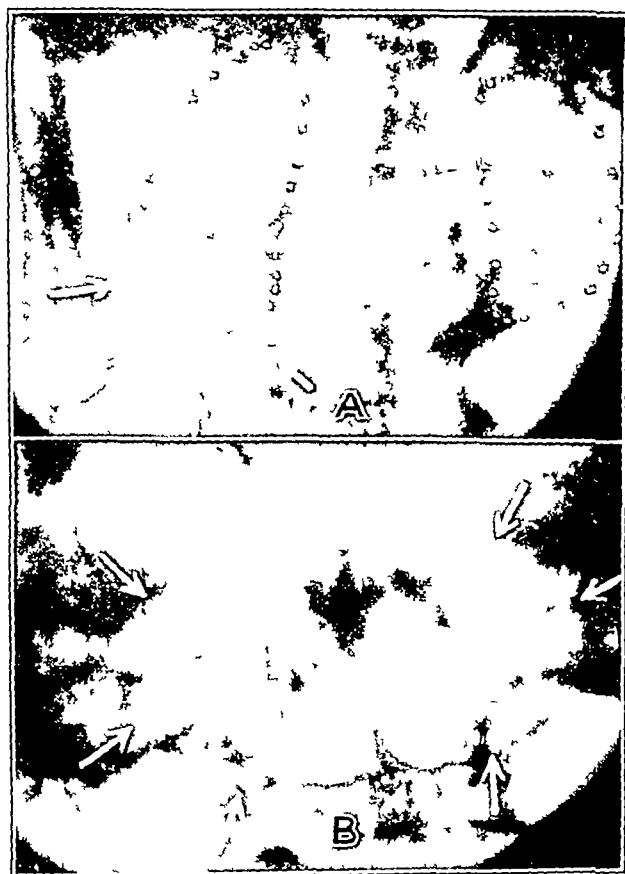


Fig. 4 (case 2)—Condition of antrum *A* Nov. 24, 1924 showing complete destruction of the floor of the antrum on the right side to be compared with the healthy antrum on the left. *B* showing the patient still well April 23, 1930 with the reformation of the floor of the right antrum.

can judge by the primary healing. We have gradually increased our total quantity of irradiation. By this method we have treated 111 patients. Of these, thirty-nine have become symptom free and are at present apparently well after a period of from one to five years, and nineteen are still under treatment and expected to recover. Treatment was interrupted in four patients, five patients cannot be traced, and forty-four are dead. It is our impression that 50 per cent of the patients with cancer of the mouth should recover if treated at once, thoroughly and skilfully by this method as soon as they come under the care of a physician, and 75 per cent should recover when patients can be taught to apply for treatment earlier.

A record of the thirty-nine symptom-free cases is as follows: less than one year, 4 cases; from one to two years, 11 cases; from two to three years, 8 cases; from three to four years, 5 cases; from four to five years, 4 cases; from five to six years, 7 cases.

Our records contain many advanced cases. In eighty-two of these patients there were palpable lymph nodes. No one can be certain that palpable lymph nodes are malignant, but certainly from a clinical standpoint they must be regarded as malignant for the sake of proper treatment.

Surgical dissections show from 12 to 20 per cent to be nonmalignant. Of the eighty-two patients with palpable lymph nodes, twenty-three have recovered, nine are under treatment, forty-four are dead, three cannot be traced, and three discontinued treatment. This shows a proportion (28 per cent) of recoveries with glandular involvement that is probably equal to the results obtained by block dissection and with less suffering on the part of the patient and less interference with the radiation treatment.

We have had twenty-three patients in whom the cancer had extended into the neighboring bone. Of these patients, nine have recovered (39 per cent), three are under treatment, one cannot be traced, nine are dead and one discontinued treatment. This has seemed to us most remarkable. We believe that if the involvement is extensive, this cannot be expected. Three cases with bone involvement were also demonstrated to us as headed by Gendreau of Montreal.

ADVANTAGES OF PURE GAMMA RADIATION TREATMENT

The advantages of pure gamma radiation treatment are as follows:

- 1 It is painless at the time of application, though it causes soreness and swelling in the mouth at the height of the radiation effect.
- 2 It does not require an anesthetic.
- 3 It does not require hospitalization.
- 4 It does not produce mutilation.
- 5 It usually does not produce constitutional symptoms.
- 6 The skin effects, when carefully managed as directed, are of no consequence.
- 7 In tongue cases, the function of the tongue is preserved.
- 8 It usually causes the disappearance of metastatic lymph nodes. When these are sluggish, we sometimes insert radium needles into the lymph node. If the glands break down they are removed surgically.

DISADVANTAGES OF PURE GAMMA RADIATION TREATMENT

The disadvantages of pure gamma radiation treatment are as follows:

- 1 It is exceedingly expensive because one is only using a small portion of the total radiation.
- 2 It is not very practical to hire radium because one must pry while it is in transit.
- 3 A considerable quantity of radium must be available if one is treating a number of patients and only one who treats only a few patients generally lacks experience.
- 4 It interferes with the occupation of the patient during a period of at least a month.
- 5 It requires the constant or daily supervision of the experienced radiologist and cannot be turned over to technicians.

6 It requires the constant cooperation of the patient, which may be difficult to obtain

7 The prolonged treatment that is necessary may be interrupted by ignorant patients who do not appreciate the seriousness of the disease or who consider themselves well prematurely

8 The greatest possible precautions against undue personal exposure must be taken by the radiologist and the technician because of the large amounts of radium that must be used

ASSOCIATED TREATMENT

1 All use of tobacco must be prohibited

2 A roentgen examination should be made of all the teeth and of the alveolar process

3 All diseased teeth should be removed, either at the beginning or as soon as sufficient radiation has been given to devitalize the cancer cells so that they will not be extended by the traumatism

4 The mouth should be cleansed and kept clean. This will require much care and gentleness

5 There should be a complete blood count made at the beginning and repeated from time to time during the treatment. If the patients are anemic, appropriate treatment must be instituted

6 A Wassermann test should be made in most cases, for a large percentage of cancers of the mouth develop on old syphilitic lesions. Therefore, the presence of a positive Wassermann test does not eliminate the diagnosis of cancer and should not delay the treatment. Likewise, a microscopic diagnosis of cancer does not eliminate the possibility of associated syphilis. Both a microscopic diagnosis and a Wassermann test are usually advisable in each case

7 When a section is taken for a microscopic examination, radiation treatment should be used either before or immediately afterward and should be continued until the lesion is proved not to be a cancer, or until sufficient radiation has been used to cure the cancer. The fact that one considers a section necessary shows that cancer is a possibility. Under such management, with immediate associated irradiation, we have never seen any bad effects from doing a biopsy

8 The nourishment of these patients must be carefully provided for, otherwise they are likely to avoid food and lower their vitality

1321 Spruce Street

ABSTRACT OF DISCUSSION

DR GEORGE W GRIFF Pittsburgh I hope the significance of this presentation is impressed on the audience. I take it that the manner in which radium is applied is of more importance than the mere fact of treating some disease with radium. Those who use radium perhaps forget this and others perhaps fail to realize this point at all. The technic of radium treatment must be learned. If one will duplicate the results of the authors he must learn how to do it. I felt for many years that the surface application of radium in the mouth was the preferable method of treatment to interstitial irradiation. I am glad to see that Drs Pfahler and Vastine more or less corroborate my belief in this respect. All know the drawbacks to interstitial irradiation in the mouth and certainly the average radiologist will stand a much better chance of curing a larger percentage of cases if he tries to perfect himself in the technic of surface application than he will by the use of implants. There are circumstances of course in which surface application is impossible but wherever it is possible it seems to me the chance of recovery is greater. I decide whether I shall use surface application or implants by the fact as to whether it seems possible to keep the radium in its proper

location for a sufficient length of time to give the full dose. If that can't be done of course it is useless to attempt the surface application. Undoubtedly a great part of the unusual results shown by the authors are due to an added method of treatment and that is external application of large doses of radium. This, I think, is new to most of us. Certainly the results shown here and the treatment of metastases open up a large field for thought. It has been my experience as a rule, that when patients with carcinoma in the mouth develop large visible cervical glands the case is practically hopeless, and yet the authors have shown several cases in which these metastases have disappeared entirely. Any method of treatment that will allow of such results is certainly a great advance. Surgery is not the final and ideal method for the treatment of cervical metastasis, that is sure. It looks as if here was a method which will increase the number of cures.

DR J E GENDREAU, Montreal This method can give very good results, not only in that special part of the body but in other parts. For instance, if one wants to introduce into the axilla a great amount of radiation through external agents, radium or x rays, heavy filtration must be used. If only one or two erythema skin doses per port of entry can be given much of that radiation will not be sent deeply, but if as much as five erythema skin doses per field through a heavy filter can be used, there will be much more in the axilla. It is just the same for radium. When about 50,000 millicurie hours is given, a very thick filter must be used to avoid producing skin lesions. I have been following the method for many years and I had the privilege of showing it to Dr Ernst and Dr Pfahler in Montreal in three cases of cancer of the floor of the mouth with invasion of the bone and metastasis, that had been apparently cured for many years. These cases had been treated by surface applications only inside and outside the mouth and the result was a complete disappearance of the nodes and of the tumor in the mouth. It would have been difficult to obtain the same results with low filtration. I never had, though the wonderful results that the authors have shown in the reconstruction of the divided bone itself in many cases I had destruction.

DR GEORGE E PFAHLER, Philadelphia We have no rule that we can lay down for the treatment of cancer of the mouth. Every case must be individualized and the treatment must be adapted to the individual case. We do use interstitial radiation but we do not usually begin with interstitial radiation. We use a surface radiation and when we get to a standstill in a lymph node, for example, or an induration remaining in the tongue, we insert radium needles to get some additional help. But it is my opinion that whenever interstitial radiation is used we should add surface radiation for the congestion that is set up by the interstitial radiation at a distant point where cancer cells may still be viable. Those cells may be stimulated to grow unless one adds some surface radiation.

Expert Witnesses—Just as we have in the practice of medicine the so called general practitioner who must study and treat all types of disease and conditions presented to him so we have had in times passed in the field of legal medicine those who attempted to qualify as advisers of the court in the elucidation of problems of widely varying character. However the advances in the field of scientific medicine have been so marked in recent years that no single mind is able to carry the details of all of the many branches. The questions presented for solution in courts of law are so intricate oftentimes that it is not to be expected that any but carefully trained pathologists, neurologists, chemists, surgeons, obstetricians, chemists and other specialists would be in a position to act as real judicial advisers. In many cases the aid of several experts must be invoked as the questions involved may necessitate a comprehensive knowledge of different fields. Hence the courts demand that only those especially qualified by experience and special study along definite lines shall be called upon to aid in the clearing up of problems presented for solution. Such witnesses or advisers are known as expert witnesses and are asked to testify as to their opinions or as to the facts based on their special examinations of the case or as to the deductions to be made from the facts set before the court by other witnesses.—Webster R W Legal Medicine and Toxicology Philadelphia W B Saunders Company 1930

REMOVABLE INTERNAL FIXATION IN FRACTURES *

W B CARRELL, M D

AND

P M GIRARD M D

DALLAS, TEXAS

An analysis of the fracture problem by committees making careful surveys in large groups of cases during the past few years, has served to establish certain definite principles that must be followed though methods for carrying out these principles will differ with surgeons according to their training and equipment. The final result, a return to function, may be equally good with widely variant methods.

In appraising a fracture one must see more than a broken bone. The ultimate goal, return to function, depends on the recovery of muscles and ligaments as well, for bones may unite in good position after rough handling, but the damage in soft tissue may be irreparable. A trained surgeon with the right conception of the problem will be able to reduce most fractures by manipulation or traction and direct the subsequent treatment for the patient's final recovery. It should therefore be the aim of the orthopedic surgeon to perfect the technique of closed reductions. This will result in the successful treatment of many fractures that would come to open operation under less skilful care.

Under ideal conditions, however, there are some fractures that can be treated more successfully by internal fixation of the fragments, and the surgeon should be prepared to follow this method when indicated. Additional equipment necessary is knowledge of bone

in bone surgery, one may consider open operation in fractures of the following groups:

- 1 Certain fractures about joints when muscle contraction prevents approximation by the closed method. Transverse fractures of the olecranon and patella are instances.
- 2 Fractures extending into weight-bearing joints with resulting, uneven surfaces opposed.
- 3 Nonunion.
- 4 Malunion, when sufficient deformity is present to interfere with function.
- 5 Recent fractures, after failure by well planned closed methods.

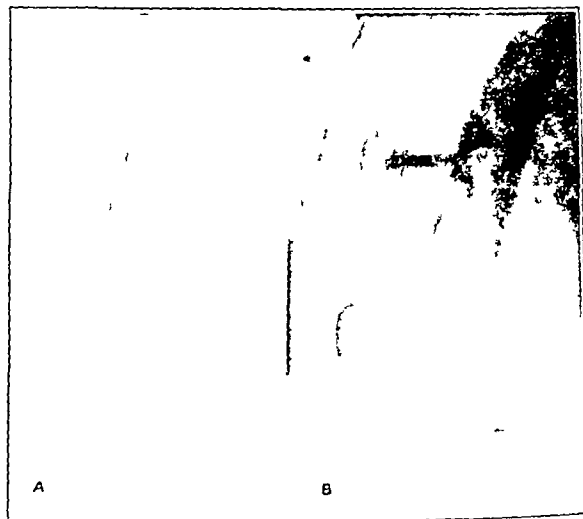


Fig 2—A fracture of lower third of the femur B fragments held by staple

As there are different plans for successfully reducing or splinting fractures there are likewise different methods for fixing them in operative work, with equally good results. Removable internal fixation, an old principle practiced by Allen Thompson and others, has merit in selected cases. It is our purpose in this paper to suggest some modifications to the method which makes it applicable to a wider range of conditions. It does not meet every demand for an ideal fixation device, neither do other instruments in general use. This fixation is not rigid, unless combined with plaster, and therefore it is difficult to get early motion in the adjacent joint. The pin projects through the skin and may favor infection. From our experience, however, this danger is not warranted.

In a limited number, but including several varieties of fractures, we have found that fixation is adequate, and, by hinging the plaster at the joint, motion may be instituted immediately after operation. With external fixation in plaster, the pin has a distinct advantage in controlling completely the tendency for angulation due to the contraction of muscles. This is observed regularly in the middle and upper third of the femur. The method is so easily and quickly applied that it changes a rather major operation to one of less exposure, less trauma and, therefore, within the sphere of a greater number of surgeons.

Depending on the type of fracture, three different devices have been used. For oblique fractures in the long bones and T-fractures in the joint, as the lower end of the humerus, femur or tibia, the screw is well adapted. It is made of stainless steel with a drill point and matching thread and is provided with an ordinary nut, which is tightened after the screw has firmly engaged the distal fragment. We have tried making a



Fig 1—A fracture of upper third of the femur B held by removable screw

surgery and adequately trained assistants who can carry out a scrupulous technic in the operating room. The average technic used in abdominal surgery would be disastrous if it should be followed in a series of bone cases.

With the background of good mechanical sense and familiarity with the principles of splinting and training

* Read before the Section on Orthopedic Surgery at the Eighty First Annual Session of the American Medical Association June 26, 1930.

* Owing to lack of space this article is abbreviated in THE JOURNAL by the omission of several illustrations. The complete article appears in the authors' reprints.

shoulder instead of a nut, but rejected it, because of the uncertainty in having a perfect fit for the case at hand. A sleeve placed over the screw and the nut outside, forcing the sleeve against the near fragment, was tried but found to be more cumbersome and less effective.

For application of the screw shown in the accompanying illustrations, the bones are approximated and held with a small narrow clamp. Two carpenter hand drills are provided. One drill, slightly larger than the screw, is placed obliquely through the nearer fragment. The other, smaller than the screw, is passed through the distal fragment. The screw, held in the chuck of one of the hand drills, engages firmly in the distal fragment and the nuts are then screwed tight with pliers against the nearer fragment. The screw is set obliquely so that the lines of stress may cross the screw instead of running parallel with it. In the latter position, the threads would receive all the strain and be less stable. The incision is completely closed and the screw extends about half an inch beyond the snugly applied dressings. Two light splints of plaster are added and applied evenly over the distance of the fractured bone but not including either joint. One of the splints incorporates the screw, and the two are bandaged securely and permitted to set. These inside splints fix the screw and because of their accurate fit do not permit movement of it, as would be present in a large plaster including the pelvis and entire leg. The outside plaster may be hinged at the elbow or knee for early motion. The screw should be left from three to four weeks and can be removed easily without pain. A pressure pad should be substituted in the case of a fractured femur.

In transverse or slightly oblique fractures, with insecurity after reductions, the two pronged fork may work admirably. After reduction, the bones are held with forceps on each fragment and the fork is driven through the cortex as one would hammer a nail. It is important that the holes should be started with a drill, otherwise a fragment may split out and defeat the purpose. The pin emerges through the dressing and is

wound. On splitting the bar completely, it may be removed in sections and used on a simple fracture with easy removal.

These simple devices have been of greater value in fractures of two or three weeks' duration when manipulations and imperfect traction have failed to secure a satisfactory position. The argument might be made that good early treatment would prevent such conditions, but the facts are that consulting fracture surgeons will continue to see them and will wisely elect to open some rather than risk further trauma in late manipulation or

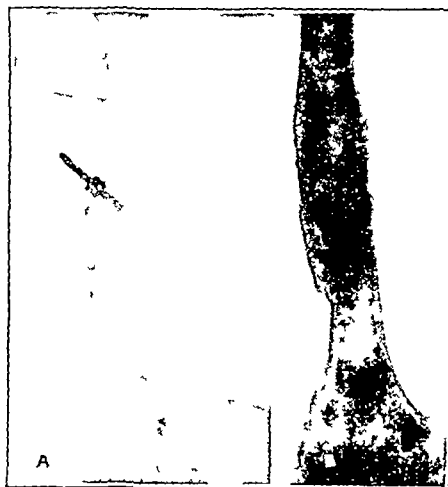


Fig. 4—A nonunion (nine months) in fractured humerus. B union four months later. Osteoperiosteal bone graft and screw.

unless traction. The method has been used several times in cases of nonunion. The fragments were freshened and fixed securely with a screw, after which osteoperiosteal grafts were placed in the usual manner. Figure 6 is a nonunion of the femur of eighteen months' duration, in the case of a healthy man, aged 23. The screw and periosteal grafts were used and consolidation was complete in four months.

The choice of bone graft operations is not under discussion, but those who prefer osteoperiosteal grafts will find temporary fixation one of the factors in preventing failure by the method. The most definite indication for the screw fixation is in joint fractures with widening of the articular surface.

Figure 7 is a fractured humerus with good traction for three weeks without reduction. The deformity was reduced to a hair-line fracture by open operation and fixation was so complete by use of a screw that motion was immediately instituted and recovery was complete in three months.

The plan of removable fixation is not proposed to meet all requirements in an operation in fractures but in selected cases

we have found it adequate easily applied and worth a place in the armamentarium of the fracture surgeon.

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ABSTRACT OF DISCUSSION

DR. ROBERT D. SCHROCK, Omaha: The procedure of Drs. Carrell and Girard I believe to be a very timely one. Their emphasis, however, on the introduction of the minimum amount of foreign material to obtain fixation I believe should be urged just a little bit further. Their ideas are so much in agreement with my own practice that I cannot find sufficient points of

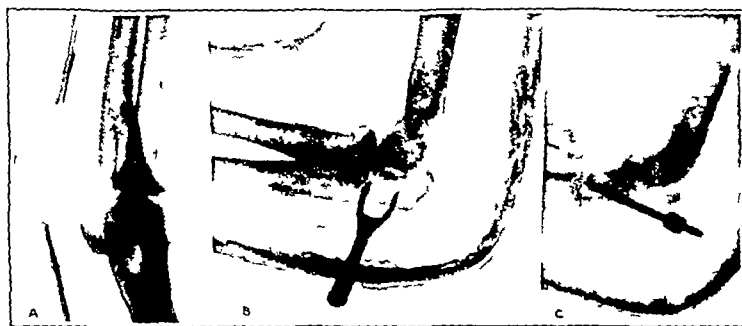


Fig. 3—A fractured olecranon of four days' duration. B, fragments held in apposition with elbow at right angle position by removable staple. C, another similar fracture held by removable screw.

fastened to the plaster in the same manner as described for the screw. It is obviously less secure but meets every requirement in some cases and is even more quickly and easily applied. The third device is, in principle, a miniature bone clamp. Two spurs are made on the end of a steel tube and through the tube a threaded bar is split at one end to form the two arms of a clamp and when tightened by a nut on the outside, effects a permanent grasp on the bone. This instrument was designed especially for compound fractures and even though bulky can be removed through the open

difference to present a desirable opposition to the ideas presented. The minimum amount of foreign material introduced adds to safety in the necessary open reduction. I think the authors did not stress in their discussion the added necessity of adequate external fixation is well. More than that, in the femur, with the minimum internal fixation, the essential fixture is traction efficiently applied in order to prevent the external bowing of that femur, particularly in the middle third. I should like to have the authors tell something of the difficulty of removal of the screw, particularly with the nut on it. It seems to me that there will be a little difficulty in removing that without local

that if it is left in too long it will cause irritative changes in the bone. These nonabsorbable materials usually should be removed within a period of from three to six weeks. The method of Drs. Carrell and Girard apparently has these advantages over those previously advanced. It is easier to apply, the fixation is stronger and it is easier to remove. The disadvantage may be that they failed to stress the necessity of external splinting. In all these cases of splinting internally, they must also be well fixed on the outside.

DR ALFRED J. BUKA, Pittsburgh. Drs. Carrell and Girard have shown that foreign material, especially metal, has no business generally to remain in fracture sites ad infinitum. I think the idea of removing such splints is right and that leaving them at a fracture site for an indefinite period is out of place and often dangerous. Any one doing reconstruction and fracture work has found it necessary from time to time to take out some of this hardware. I feel that setting out with a plan for a definite time of removal of metallic substances put in a fracture site for fixation is more valuable than anything pertaining to their use.

DR S. C. WOLFFBERG, Chicago. If a patient is subjected to an open operation for reducing fractures, and an osteoperiosteal graft is done, it should not be necessary to put in any external material, as staples or anything else. If the plaster cast or splint or whatever external support is used is applied adequately and has the right kind of assistance, it should not be necessary to put in any foreign material. I don't know why there is so much objection to putting in an ordinary staple when the fracture is opened and the ends are brought together. I do not have to take them out if they are put in properly. In more than a hundred cases I have not had to remove more than two or three staples and they were all at the anterior portion in the middle third of the tibia. They were superficial and both cases were old. One thing that is most important is the necessity of not repeating manipulations in trying to bring the ends together and not doing any open operation with the hope that union will result.

DR WALTER G. STERN, Cleveland. Being the only one in my memory who has ever come before this section to read a paper on the nonoperative treatment of compound fractures, I

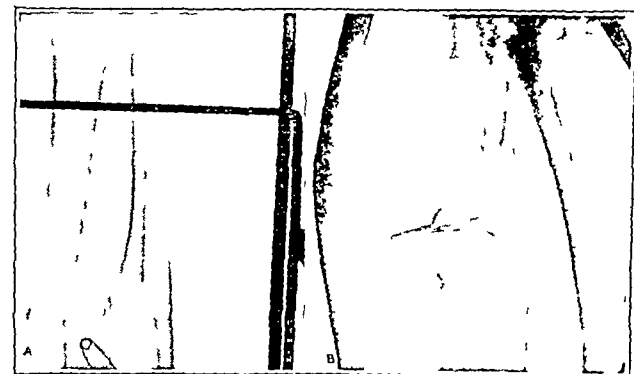


Fig 5—A compound fracture B removable clamp holding fragments. The iron bars connect the foot and knee casts allowing for dressing of wound and firm fixation. Union three months later.

anesthesia. I have been using little pins for internal fixation of fractures, devised by Dr. John P. Lord. They are made of diamond point wire. A machine drill is used for making the hole, the diamond point being too short to cut the hard cortex of bone. The removal of the drills is the easiest part of the procedure. At the end of about the third week they can be pulled out with dressing forceps without pain. The drills are made in various sizes to meet the indications. I have been using phonograph needles for the small metacarpal fractures but this type of drill is sufficiently heavy to hold femurs.

DR HARRY E. MOCK, Chicago. The minimum amount of foreign material should be used in any of these open reduction cases, and preference given to external fixation whenever possible. Each year I am reducing the percentage of open operations for recent fractures more and more. I now operate in only 2 per cent of early fractures. I long ago abandoned the Lane plate. The various fixation screws shown by the authors are very ingenious. These screws give the minimum amount of foreign material for fixation, but there is the same danger of osteoporosis around the site of application of the screw and therefore do add a certain amount to the danger of infection and of nonunion. I get a great many cases of reconstructive surgery. This last year I have had two cases of markedly deformed elbow joints the result of fractures of the lower end of the humerus in which screws were applied as a method of fixation without putting on a Lane plate. Every year brings forth a certain number of examples of worse deformities and more prolonged disabilities, the result of attempted open reduction and fixation of fractured fragments than could possibly have resulted from even a poorly closed reduction of the original fracture. I doubt the advisability of advocating to the rank and file of the profession the use of foreign material in fixation of fractures. Papers on technique for open reduction should always emphasize the fact that only a very small percentage of fractures require open reduction.

DR JOSEPH E. WHEELER, Jefferson Barracks, Mo. Ordinarily such methods are used in the treatment of fractures as traction, manipulation, external fixation and countertraction but in some fractures, oblique or spiral or those near the joint extending into the articular surfaces of the joint it is necessary to use some internal splinting. These splints are of two kinds, absorbable and nonabsorbable. The nonabsorbable material is stronger and where there is any great stress, the nonabsorbable is usually employed. The disadvantage in the nonabsorbable is

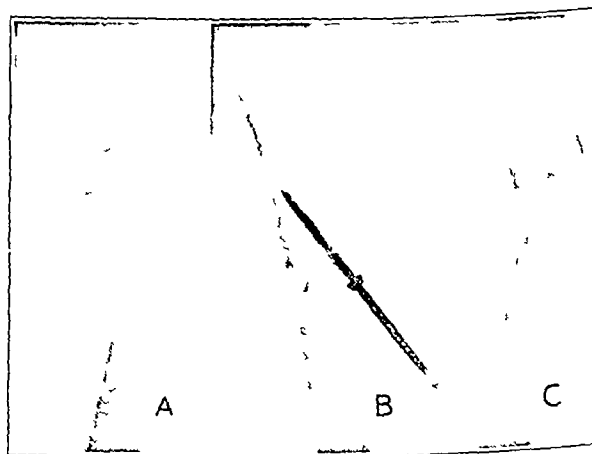


Fig 6 (Captain H.)—A nonunion of femur of eighteen months duration B open reduction fixation by removable screw plus periosteal bone graft C good union in four months.

cannot help but warn you of tempting the medical profession in general with the assuring principle that it is safe to operate immediately on the bones of a compound fracture for the purpose of correcting the deformity. I am sure a skilful technic will permit a trained operator to put in staples or to use the ingenious combination of nut and bolt that has been shown here, but I do not think the method should be spread broadcast in a medical journal so that the ordinary rank and file of the men treating fractures will think that they can operate on the bones of compound fractures and put in metal devices and get away with it, because in my experience in my neck of the woods it can't be

done. The great danger in compound fracture is not nonunion or malposition, it is infection, and when foreign material is put in or operation is done on the bones of a compound fracture—the resistance of which is already weakened by the trauma—nothing is added to the ability to resist infection. The first thing one must do in a compound fracture is to overcome the ever present danger of infection and if after eight or ten days this danger of infection is over, one must let his conscience be his guide, but the infection should be overcome first. Drs. Carrell and Girard have shown in certain of their cases that even after two or three weeks they have been able to reduce the fracture, hold it with their ingenious staple and get union, so one need not be afraid of waiting eight, ten or fourteen days for the danger of infection of the compound fracture to be overcome before performing any operation or extensive manipulations.

DR W B CARRELL, Dallas, Texas. Dr Stern's remarks are pertinent to a discussion on open operation in compound fractures. I shall not argue this point, but for those who believe the potential factors for infection in some cases are so great that conservative treatment is dangerous, this miniature bone clamp, following debridement of the wound, serves the excellent purpose of holding the fragments in position without penetrating

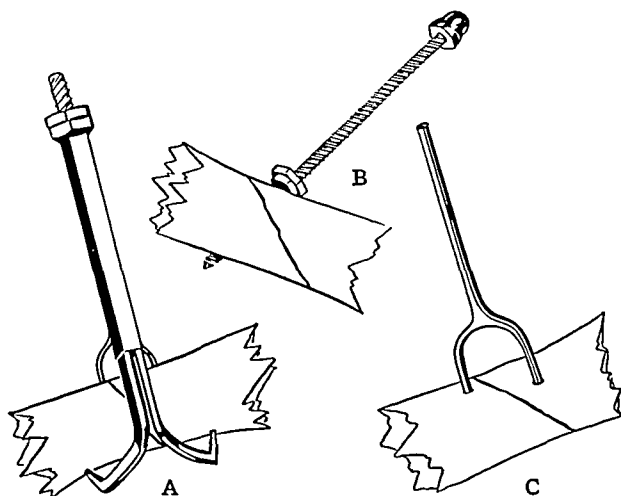


Fig. 12—A, removable clamp particularly adapted to compound fractures in three pieces not including two nuts. B, removable screw for internal fixation. C, removable staple for internal fixation.

the bone or in any way interfering with subsequent treatment by surgical solution of chlorinated soda or petrolatum packs. Notching the fragments will in many cases be adequate. Displacement is more likely to occur during application of plaster and delayed closure would certainly minimize this misfortune. The method, however, generally applied, seems fraught with possible danger of a break in surgical technic. With regard to difficulties in removing the screw, attention is directed to the type of nut with the external surface rounded to permit less friction when backing through the soft tissues. Removal is quite easy and has not been complained of by the patient. The staple is slightly more difficult and the removal can be facilitated by making the skin opening long enough to permit undue tension.

Arthritis Without Bacteria in Joints—Friebberg has shown that arthritis can occur without bacteria entering the joints and was able to produce cartilage destruction, proliferation of the synovial membrane and new bone formation in rabbits by injecting intra-articularly the sterile filtrate from a strain of Flexner's dysentery bacillus. As control fluids he used salt solution, horse serum and dilute lactic acid which on injection did not produce a similar arthritis. These researches may possibly supply one plank in bridging over the gap between the infective and noninfective theories for if sterile filtrates of bacteria can produce the lesions of arthritis deformans, toxic bodies resulting from metabolic disturbances may also be capable of setting up similar changes.—Powerton F. I. and Schlesinger B. Recent Advances in the Study of Rheumatism. Philadelphia: P. Blakiston's Son & Co., 1931.

THE TREATMENT OF PEPTIC ULCER WITH GASTRIC MUCIN

PRELIMINARY REPORT *

SAMUEL J. FOGELSON, M.D.

CHICAGO

The ideal therapeutic agent for use in combating the irritative action of gastric juice in peptic ulcer is one that will neutralize or combine with the acid without materially stimulating or depressing gastric secretion, without materially affecting gastro-intestinal activity, and without having a general systemic action. Although alkaline powders have been and are being used in the treatment of peptic ulcer, it is well known that they are not ideal.

In the literature on gastric secretion, the capacity of mucus to lower the free acid in the stomach is repeatedly suggested. In 1879 Heidenheim believed that mucus was alkaline and later Pavlov¹ suggested that it was the mucus which lowered the free acidity of the stomach by neutralization. Ivy² made pouches of the pyloric antrum in dogs and found the secretion of these pouches to be "mucoid, viscous, tenacious, transparent, odorless and slightly salty. It resembled egg white in appearance and consistency, was slightly alkaline with a p_H of 7.0 to 7.5 and neutral to litmus." Lim,³ in an exhaustive article on the relationship between gastric secretion and basal secretion of the stomach, states that "it thus seems not unlikely that the colloid nature of mucus accounts (adsorption of alkali) for the titratable total acid found with the lowest secretory rates." He adds that "at lower secretion rates the concentration of mucus is unquestionably higher especially in the case of entire stomach juice, containing pyloric secretion which is continuous and little altered by secretory activity in the fundus."

These physiologic observations suggested gastric mucus as an ideal antacid in that (a) it combines readily with the free acid, (b) it is a natural substance which plays normally a protective, soothing and lubricating role in the functioning of mucous membranes, and (c) its secretion or ingestion causes no chemical disturbances in the body and no unfavorable effect on gastro-intestinal secretory or motor activity. To evaluate gastric mucus as an antacid, it was necessary either to stimulate the secretion of mucus by the gastric glands or to administer it by mouth. Increasing the bivalent anions in the circulation should stimulate secretion from the gastric mucous glands⁴ but in these experiments on Pavlov pouch dogs no definite effect was discovered. The alternative procedure, then, was to prepare mucus from other sources and administer it orally to experimental animals and patients with the hope that the measurable free acid would in this way be definitely lowered and the lower secretion rates of Lim would be reproduced.

An ideal preparation of mucus would have the characteristics of the mucus that Ivy isolated in his experiments on the pyloric pouch. With the cooperation of Dr. Fred Fenger of the Armour & Co. Research

* From the Department of Experimental Surgery, Northwestern University Medical School.

¹ Pavlov, I. P. The Work of the Digestive Glands. Philadelphia: J. B. Lippincott Company, 1910.

² Ivy, A. C. and Osawa, Yutaka. Am. J. Physiol. 77: 51 (Aug.) 1921.

³ Lim, R. K. S. Am. J. Physiol. 69: 318 (July) 1924.

⁴ Balkin, B. P. Die auserliche Secretion der Verdauungsdrusen, Berlin: Springer, 1928.

Laboratory in Organotherapeutics mucin was prepared by precipitation from a dilute hydrochloric acid solution of gastric mucosa at a pH of 4.5 after the addition of an equal volume of alcohol. When dried and neutralized to a pH of 7.0, it is mucoid, viscous, readily soluble in acid and alkali, faintly soluble in water and has a high combining power. One gram of this powdered mucin combines with about 15 cc of 0.5 per cent hydrochloric acid.

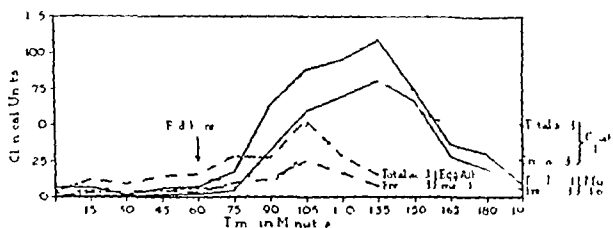


Chart 1—Typical gastric analysis on feeding dogs 1 ounce of mucin, gelatin and egg albumin. From the free and total acid values shown here it is obvious that mucin as at present prepared is a slightly greater gastric stimulant than either egg albumin or gelatin.

On chemical analysis this powder was found to contain moisture, 5 per cent, ash, 14.65 per cent, sodium chloride, 2.50 per cent, organic chlorine, none, total nitrogen, 9.93 per cent, phosphorus pentoxide, 4.45 per cent.

EXPERIMENTAL RESULTS

The mucin prepared from the hog's gastric mucosa and used in this experiment has a high combining power with free acid but does not depress gastric secretion. In fact, when equal quantities of this mucin in solution, egg albumin or gelatin, respectively, were put into the stomachs of Pavlov pouch dogs through a stomach tube, the mucin led to a slightly greater secretion of acid than either gelatin or egg albumin (chart 1). It is well known that both egg albumin and gelatin are weak excitants of the gastric glands and for this reason they were contrasted to the mucin. Our results show that the mucin as prepared at present is only a mild gastric secretory excitant. These experimental results have been confirmed by Drs. Ivy and Kim, who report the following from the hog gastric mucin with which I supplied them: "(1) The hog's gastric mucin used has a high combining power (1 Gm combining with

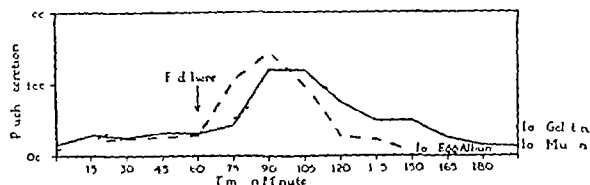


Chart 2—This chart supplements chart 1 and demonstrates that our preparation of mucin put in the stomachs of Pavlov pouch dogs will lead to about the same quantity of pouch secretion as gelatin or egg albumin.

from 12 to 15 cc of tenth normal hydrochloric acid), (2) it does not irritate the gastro-intestinal mucosa, (3) it mildly stimulates the gastric glands and in its present form it excites the gastric glands on being perfused through a pouch of the entire stomach, which proves that it contains secretagogues.

When 2 ounces of mucin, egg albumin, gelatin or meat, respectively, were introduced by stomach tube into the stomach of the Pavlov pouch dogs and the dogs were excited to secrete gastric juice at the beginning

of the experiments by an adequate dose of histamine, it was noted that there was complete absence of free hydrochloric acid only in the stomachs containing the mucin, whereas in the Pavlov pouch in all cases secreted the usual free acid. These results show that the mucin has a high combining power with free acid *in vivo*. Chart 3 shows a comparison of the free acid in the stomach when immediately after histamine stimulation 2 ounces of mucin, gelatin, or egg albumin and 4 ounces of meat, respectively, were put in the stomachs of Pavlov pouch dogs.

Of further interest were the results obtained from feeding Pavlov pouch dogs 1 pound of meat in which there was mixed half an ounce of powdered mucin. Meat itself, of course, has a high combining power, but in the controls that were fed meat alone some free acid was present in these dogs' stomachs throughout in observation period of from five to seven hours or until the stomachs were empty. But this free acid was absent in all cases when the half ounce of mucin was added to the meat, this was especially significant as the pouches in all trials showed the expected stimulation (chart 4).

Encouraged by these results in animal experiments and because I was able to obtain a preparation of mucin

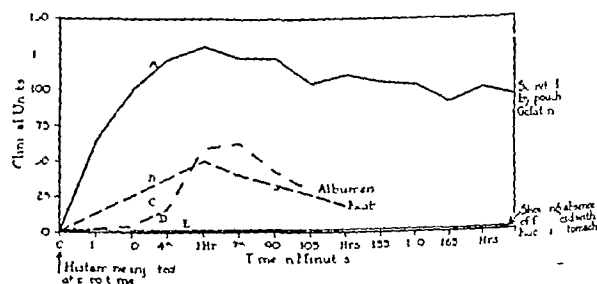


Chart 3—Demonstrating that after adequate stimulation by histamine as shown by the pouch secretion only mucin will keep the free acid in the stomach at zero. Only the free acid value are plotted in the chart. A is free acid value of the pouch secretion. B is free acid value of gastric contents with 4 ounces of meat in the stomach. C is free acid values of gastric contents with 2 ounces of gelatin in the stomach. D is free acid values of gastric contents with 2 ounces of egg albumin in the stomach. L shows absence of free acid with 2 ounces of mucin in the stomach.

free from intestinal parasites, ova and other objectionable features, I extended the experiments to cases of peptic ulcer in man.

CLINICAL RESULTS

Since January, 1930, twelve patients with typical ulcer histories were available. The roentgen appearances in ten of these were those usually interpreted as characteristic of duodenal ulcer. One of the remaining patients had a gastric resection and the other had a gastro-enterostomy. In both of these, pain after eating was the major complaint. The duration of symptoms varied from two to seven years and all of the patients had been on the usual alkalinizing regimen together with the customary nonirritating diet with only temporary relief. One patient had marked retention after ten or twelve hours.

The general procedure was to give each patient an ounce of powdered mucin prepared as described with each meal and from 20 to 40 grains in tablet form either hourly or every half hour when the patient had severe pain or when the fractional Ewald test meal showed unusually high free acid. The ounce dose of mucin was not easy for the patients to take because of its viscous character, but Miss Tufts, the dietitian at Wesley Memorial Hospital, solved this problem by

incorporating it in ice cream or similar frozen foods, as well as in thick drinks such as malted milk. Further treatment consisted only of the usual bland, convalescent ulcer diet.

In all twelve patients the subjective symptoms disappeared within three days of treatment, the most gratifying feature being the persistent absence of pain, which did not recur despite two grave dietary indiscretions in two patients with alcoholic tendencies. The periods of observation have, however, been only from

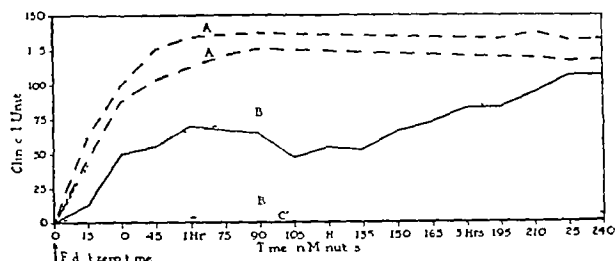


Chart 4—This contrasts feeding Pavlov pouch dogs a pound of meat alone with a pound of meat mixed with half an ounce of mucin. There is no free acid in the stomach when the mucin is added as shown by curve C. A total acid value of pouch secretion. A free acid value of pouch secretion. B total acid value of gastric contents with meat feeding. B free acid value gastric contents with meat plus mucin feeding. C total acid value of gastric contents with meat plus mucin feeding. C absence of free acid in gastric contents with meat plus mucin feeding.

two to five months. The patient with retention now has a normal emptying time. As yet, difficulties have not been encountered from excessive quantities of mucus in the stools nor has any patient shown any ill effect from being fed such large quantities of mucin.

COMMENT

It is realized that periods of observation varying from two to five months cannot justify any thought of cure in this small series of twelve cases. But since mucin from a theoretical and experimental point of view proves to be practically ideal, an extensive clinical trial is indicated. The mechanism that afforded the relief from symptoms may be the combination of the free hydrochloric acid with the mucin, although another important factor is present that cannot be ignored. J. E. Whitlow,⁵ studying the protective role of gastric mucus against the proteolytic action of gastric secretion, concluded:

1 Gastric mucus does delay and inhibit—though not prevent—the diffusion of hydrochloric acid and pepsin.

2 The rate of diffusion of hydrochloric acid through gastric mucus is inversely proportional to the depth of mucous layer and inversely proportional to increase in viscosity of the mucus; the diffusion of pepsin is directly proportional to the time required for the hydrochloric acid to diffuse through the entire depth of the mucous layer.

3 The presence of tenth normal hydrochloric acid in gastric mucus hastens the rate of diffusion of pepsin through a layer of mucus.

4 The fact that gastric mucus covers the mucous membrane of the stomach with a viscid tenacious coat that retards digestion and diffusion of gastric juice as shown by *in vitro* experiments makes it impossible to deny the protective role of this secretion against autodigestion of the stomach.

5 The most direct evidence of all however is the fact that when the mucus is wiped away with a cotton swab and tenth normal hydrochloric acid or normal gastric juice is applied bleeding occurs and when merely swabbed with equal vigor and mechanical irritation no bleeding occurs. It becomes a self-evident fact therefore that mucus protects the gastric mucosa against the action of gastric juice.

5 Whitlow, J. F. The Protective Action of Mucus. Master's thesis, Loyola University (unpublished).

Similar results are reported by Klug⁶ and it is highly probable that the relief from symptoms obtained from feeding the mucin preparation was secondary to two factors. First, the mucin coated the ulcer and protected it against the proteolytic action of the gastric secretion, and, second, through its high combining power with free acid it united with enough hydrochloric acid not only to neutralize the corrosive action of gastric juice but also to prolong the rate of dialysis of pepsin through the now present protective mucin layer. Obviously, both these factors would be important in affording relief from pain and in hastening healing.

SUMMARY

1 Gastric mucin prepared from hog's stomach is only a mild excitant of gastric secretion.

2 Gastric mucin has a high combining power. Two ounces of mucin placed in the stomach of the dog was more than sufficient to combine with the acid secreted in response to the injection of 1 mg. of histamine.

3 When half an ounce of mucin was mixed with a pound of meat and fed to a dog, free acid did not appear in the dog's stomach throughout the period of observation of from five to seven hours.

4 Complete relief from symptoms for varying periods of from two to five months was afforded to twelve patients with classic histories and roentgen appearances of peptic ulcer by feeding them about an ounce of hog's gastric mucin three times a day with their meals in addition to about 30 grains of mucin in tablet form hourly throughout the day.

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USE OF VITAMIN B IN DIETS OF INFANTS

FURTHER OBSERVATIONS*

B. RAYMOND HOOBLER, M.D.

DETROIT

Since my former report¹ there has been a prodigious amount of work done covering many phases of vitamin B. The chemical and biologic properties have received the greatest attention, as evidenced by the many reports of research that have been published. The problem seems to be world wide if one takes into account the geographic sources of these studies. The greater part of the work is still being done on animals particularly on birds a group that is most susceptible to this deficiency disease. The chemists also have been exceedingly busy in this field. I shall give a summary of the most recent observations of biologists and biochemists before proceeding to the original work with which this paper deals.

The most striking development in the studies of vitamin B is the discovery that there are several different factors in what was originally considered as vitamin B. Goldberger² has separated the pellagra-preventive factor and that portion is now known as vitamin G. The term vitamin B should be restricted to the anti-neuritic fraction. The separation of these two fractions

(Klug, F. Arch. internat. de physiol. 5: 297-317, 1907.
* Read before the American Pediatric Society, Montreal, June 17, 1930.
1 Hoobler, B. R. Macy, I. G. and Outhouse, Julia. Biological Characteristics of Human Milk. Tr. Am. Ped. Soc. 24: 38, 1929.
2 Goldberger, Joseph, Wheeler, G. A. and Schrell, W. H. A Study of the Black Tongue Preventive Value of Treated Commercial Casein Together with a Test of the Black Tongue Preventive Action of a High Protein Diet. Pub. Health Rep. 45: 2-3 (Feb. 7) 1930.

is accomplished by heating, the antineuritic portion being heat labile and the pellagra-preventive being the heat stabile portion. Williams and Waterman³ believe that a third portion, which is intimately connected with the processes of digestion, will also be separated. Until recently it was believed that the animal organism could not synthesize vitamin B, but recently Bechdel and his co-workers⁴ demonstrated that this could be done in the rumen of cattle through bacterial action. This may lead to a new source of vitamin B. With the ability to separate at least two factors from the vitamin B complex, the analysis of various food products has become necessary, it is interesting to note that certain foods contain much more vitamin G and others much more of the antineuritic factor, so that a complete restatement of food values in these particulars is necessary.

Lactating animals have been shown to require from three to five times more vitamin B complex to maintain lactation than they need during nonlactating periods. There has been demonstrated a relationship existing between the basal food products and vitamin requirement. An important research conducted by Harris and Moore⁵ showed that there exists a definite balance among vitamins E and G, by greatly increasing vitamins A and D in diets an otherwise adequate amount of vitamin B is made inadequate leading to death of animals. One should be careful not to overdose with cod liver oil and viosterol unless at the same time an increasing quantity of vitamin B is also added to the diet.

Studies on the symptomatology and pathology of vitamin B deficiency have been largely confined to animal experimentation and but few clinical reports on infants have been published. Several valuable contributions, however, have been made showing that definite cases of full-fledged beriberi exist in this country, by Dr. J. I. Waring⁶ of Charleston, S. C., by Dr. Scott and Herrmann⁷ of Louisiana, by Dr. Oscar Swineford, Jr.⁸ in Virginia, by Dr. L. S. Chipman⁹ in Panama, and also by Dr. Sidney V. Haas¹⁰ as occurring in New York.

It will be seen, then, that the disease is not confined to the tropics and therefore the symptomatology of evident beriberi should be constantly in mind in dealing with more or less obscure nutritional conditions here in North America. It is my conviction, however, that our infants are menaced by a partial lack of vitamin B rather than by a complete deficiency. The former condition is much more difficult to diagnose than outspoken beriberi, in which the symptomatology has been compiled by observers in Japan and the Philippines.

The signs shown by the infant whose diet is only partially deficient in vitamin B differ markedly from those of infantile beriberi and may range all the way from fretfulness and anorexia to noticeable loss of

weight and rigidity. Contributions referring to partial deficiency have recently been made by Dennett,¹¹ Blossom,¹² West,¹³ and Morgan and Barry.¹⁴

Both the contributions on true beriberi and on partial deficiencies of vitamin B in infants are most welcome at this time when so much material is coming from the laboratories, particularly since experimental beriberi in animals differs somewhat from the human type, as pointed out by Cowgill.¹⁵

The original work to be detailed in this paper was carried out in the nursery wards of the Florence Crittenden Hospital, Detroit, in the service of Dr. Edgar Martner. Approximately 125 infants were studied over a period of five months. Whole milk dilutions were used throughout. A preparation of maltose and dextrin¹⁶ was the basic carbohydrate used in suitable quantities. Additions of vitamin B were made in the form of the extract of wheat germ and the extract of brewers yeast the potency of which had been tested on rats. This was added at the rate of 1 Gm. of wheat germ and 0.5 Gm. of brewers yeast extract to each ounce of the preparation of maltose and dextrin used. The infants were kept on the basal ration (whole milk dilutions plus maltose and dextrin) for a two week period. Records were kept of weight, total length, stem length, degree of spasticity, percentage of hemoglobin, appetite, and bowel conditions. At the end of this preliminary period the infants were kept on the same formulas and the wheat germ and yeast extracts were added in the proportions described and were continued for one month. Weights were taken weekly, but total and stem lengths were recorded only at the beginning and end of each period. The results are shown in the accompanying tables.

TABLE 1—Average Growth Monthly Stem Length

Breast fed	0.61 inch
Maltose and dextrin control	0.60 inch
Maltose and dextrin with vitamin B	0.75 inch

Table 1 takes into account growth in stem length. In taking both total and stem length, the methods used at the Merrill Palmer School were employed as described by Hejman and Hatt.¹⁷

The maltose and dextrin preparation with vitamin B additions made the best showing, the breast-fed controls next, and the maltose and dextrin preparation the poorest.

TABLE 2—Average Growth Monthly Total Length

Breast fed	0.90 inch
Maltose and dextrin controls	0.88 inch
Maltose and dextrin with vitamin B	0.91 inch

Table 2 represents the total average growth during a twenty-eight day period. Breast-fed infants grew

³ Williams R. R. and Waterman R. E. The Tripartite Nature of Vitamin B. *J Biol Chem* 78: 311 (July) 1928.

⁴ Bechdel S. I., Honeywell H. E., Dutcher R. A. and Knutsen M. H. Synthesis of Vitamin B by the Bacteria in the Rumen of Cattle. *J Biol Chem* 80: 231-238 (Nov.) 1928.

⁵ Harris L. J. and Moore Thomas. Hypervitaminoses and Vitamin Balance. An Instance of Vitamin Balance. *Biochem J* 23: 1114-1929.

⁶ Waring J. I. Beriberi in Infants. *Am J Dis Child* 38: 52-56 (July) 1929.

⁷ Scott L. C. and Herrmann George R. Beriberi (Maladie des Jambes) in Louisiana. *J A M A* 90: 2083 (June 30) 1928.

⁸ Swineford Oscar Jr. Beriberi in Virginia. *Virginia M Monthly* 56: 814-820 (March) 1930.

⁹ Chapman L. S. Beriberi in Panama. *Proc M A Isthmian Canal Zone* 14: 37-48 1927.

¹⁰ Haas S. V. Beriberi in Late Infancy. Result of Celiac Disease. *Arch Pediat* 46: 467-478 (Aug.) 1929.

¹¹ Dennett R. H. Routine Use of Vitamin B Factor in Infant Feeding. *J A M A* 92: 769-772 (March 9) 1929.

¹² Blossom A. P. Vitamin B Requirements in Infancy. *Am J Dis Child* 37: 1161-1163 (June) 1929.

¹³ West J. H. Supplying the Breast Fed Baby with Vitamin B. *Arch Pediat* 46: 646-650 (Oct.) 1929.

¹⁴ Morgan Agnes F. and Barry Margaret M. Underweight Children Increased Growth Secured Through Use of Wheat Germ. *Am J Dis Child* 39: 935-947 (May) 1930.

¹⁵ Cowgill G. R. Some Physiological and Biochemical Aspects of Deficiencies with Special Reference to Vitamin B. *Ann Int Med* 3: 230-241 (Sept.) 1929.

¹⁶ The preparation used was Dextrin Maltose No. 2. Mead's.

¹⁷ Hejman I. ucca and Hatt Elise. The Stem Length Ratio as Index of Body Type in Young Children. *Am J Phys Anthropol* 13: 287 (July Sept.) 1929.

most, those fed with the maltose and dextrin preparation with vitamin B additions were a close second, while those given the maltose and dextrin preparation only showed considerably less growth

TABLE 3—Average Daily Gains in Weight

Breast fed controls (63 individual observation periods)	0.516 ounce
Maltose and dextrin controls (124 individual observation periods 98 per cent of breast 96 per cent of breast and 15 per cent of maltose and dextrine control)	0.601 ounce
Maltose and dextrin with extract of wheat germ and yeast (51 individual observation periods)	0.788 ounce

In table 3 the gains in weight are practically the same on breast, the maltose and dextrin preparation and the maltose and dextrin preparation plus vitamin B additions of a combination of extract of wheat germ and yeast

TABLE 4—Average Daily Gains in Weight

Food	Gain	Observation of Breast Feeding	Per Cent Gain
Breast	0.593 ounce	5	
Maltose and dextrine plus extract of brewers yeast 0.5 Gm	0.550 ounce	17	98
Maltose and dextrine plus extract of wheat germ 1 Gm	0.688 ounce	19	94
Maltose and dextrin only	0.794 ounce	12	89

In an attempt to determine which was the better, wheat germ or yeast extract, a study of fifty-seven infants during a period of two weeks was made (table 4). Again the variations in gain were so narrow that no definite conclusions could be drawn, but breast controls showed the highest average daily gain, the infants given yeast extract next, those given wheat germ held third place, and those fed the preparation of maltose and dextrin were in fourth place

TABLE 5—Rigidity *

Infant	Food	1st Mo	2d Mo	3d Mo	4th Mo	5th Mo
Joanne D	Maltose and dextrin	3+	2+	2+	2+	2+
Gloria B	Maltose and dextrin plus vitamin B	+	3+	1+	1+	0
Irena	Maltose and dextrin	+	4+	+	2+	1+
Jean D	Maltose and dextrin	4+		+	2+	0
Bernice M	Maltose and dextrin plus vitamin B		4+	4+	4+	3+
Douglas E	Maltose and dextrin	4+	3+	2+	1+	0
David A	Maltose and dextrin plus vitamin B		4+	+	2+	1+
Edward J	Maltose and dextrin plus vitamin B	4+	+	2+	2+	2+
Russel	Maltose and dextrin plus vitamin B	4+	4+	4+	1+	3+
Shirley M	Maltose and dextrin	4+	+	1+		
Robert H	Breast	3+	3+	2+		Brewers yeast used

*Twenty cases were noted but only those with marked rigidity graded from 3+ or more are given here

Neither the preparation of maltose and dextrin nor the preparation with vitamin B additions was able to clear up the spasticity in certain cases. About 20 out of the 125 infants studied showed varying degrees of stiffness. I believe this to be about the ratio found in the usual hospital ward devoted to feeding cases. It was evident that ten of these twenty cases required more vitamin B than was contained in the additions supplied. It has been my experience that brewers yeast concentrate or powdered yeast is a more effective way to supply the vitamin B complex and this is borne out by the observations of Blossom¹². It should be noted that one of the most marked instances of rigidity occurred in a breast-fed child. In 1926 in collaboration

with Macy and Outhouse¹ I proved beyond question that human milk was relatively low in vitamin B content. How rapidly the rigidity cleared up under brewers yeast concentrate is shown in the table

CONCLUSIONS

1 Wheat germ and yeast in the form of dried powdered watery extracts when added in the proportions of 1 Gm of wheat germ extract and 0.5 Gm of yeast extract to 1 ounce of a preparation of maltose and dextrin and fed to infants caused no appreciable gain in weight over controls who were fed on similar formulas without vitamin B additions

2 Infants given vitamin B additions showed a greater growth in recumbent and stem length than controls not given the vitamin B additions

3 About one out of six of the infants studied showed symptoms of rigidity. This symptom disappeared in all but six of the cases, indicating that the quantity of vitamin B needed by infants differs greatly, and that one should bear in mind that while the amount of vitamin B in the commercial carbohydrate preparations may be sufficient for certain infants, there are others who will require larger quantities

1563 David Whitney Building

ANTIVENIN THERAPY IN
PURPURA *

MAX R. STOCKTON, M.D.

AND

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The following case report is submitted with the idea of stimulating further study in the use of antivenin in purpura

A. P., a healthy white soldier aged 23 for the past two years featherweight champion of the Canal Zone was admitted to Gorgas Hospital Dec 30 1929 for a submucous resection and tonsillectomy. His family history previous personal history and complete physical examination were negative. His Wassermann reaction was negative and the coagulation time and urine were normal. This man during his career as a fighter, had been struck on the nose many times and the bleeding that followed always ceased quickly. His left foot showed a small deep recent operative scar and he stated that the incision had healed rapidly and with but little bleeding.

December 31 a submucous resection under local anesthesia was performed. With the exception of the mechanical difficulties involved, due to the previous multiple fractures the operation was uneventful. For twenty-four hours after the operation there was an excessive amount of bleeding and the petrolatum packing was left in situ for forty-eight hours when its removal was followed by a severe hemorrhage. The usual local methods for the control of bleeding were employed and in addition he was given 10 cc of his own blood intramuscularly. Until Jan 16 1930 the patient was troubled with septal hematoma subsequent abscess formation between flaps periodic turbid bleeding and eventual sloughing of the septum. January 23 the patient developed an acute follicular tonsillitis with characteristic local and constitutional manifestations. He made a rapid recovery from this acute attack. As there had been no active bleeding since January 16 and the coagulation time was five minutes a local tonsillectomy was performed February 6. The operation was uneventful there was no undue bleeding and he left the operating room with dry fossae. Six hours after he had been returned to the ward from the operating room he developed a tremendous rapidly increasing extravasation of blood into his tongue and soft structures of his mouth and throat with such marked laryngeal involvement that it was necessary to perform a tracheotomy. February 7 at 11 a.m.

From the Gorgas Hospital

four hours after operation. At the time of the tracheotomy, bleeding was profuse—out of all proportion to the surgical procedure; however this was controlled by ordinary surgical means. One hour after tracheotomy he had a series of profuse hemorrhages from the tracheotomy incision. In the fifteen minutes that elapsed before he was again prepared for operation he went into marked shock and fatal exsanguination was feared. The incision was opened and the bleeding finally controlled by numerous ties and sutures.

Decannulation was performed February 11 four days after tracheotomy, the extravasation in the upper respiratory passages having been largely absorbed. He improved materially until February 22 when without apparent reason he had a profuse alarming nasal hemorrhage which despite all effort of control lasted in varying degree until February 26.

The therapeutic agents that had been employed up to this time were as follows: intramuscular injection of the patient's own blood, calcium lactate tincture of ferric chloride, intramuscular injection of horse serum, blood transfusion of 400 cc of citrated blood on the morning of February 25, liver extract and careful dietetic supervision.

February 25 when the lobule of his ear was pricked for a blood platelet count the puncture wound bled freely for twenty-four hours. It is interesting to note here that previous punctures of his finger tips had given no trouble.

There was no improvement after the blood transfusion and the hemorrhage continued. The patient was then desensitized by being given two small intracutaneous doses of 0.1 and 0.2 cc of antivenin at half hour intervals because of the previous administration of horse serum. The second dose was followed by 10 cc of antivenin given subcutaneously on the inner surface of the thigh. The leg was then bandaged and an ice cap applied the reason for doing so being the hemorrhage and swelling of the forearms which followed the two small desensitizing doses. Within twenty-four hours all bleeding stopped, and he has made an uneventful recovery.

February 25, the day of transfusion, this case history was presented during a staff conference of the Gorgas Hospital. It was suggested that antivenin be used. It was stated that Dr. Herbert C. Clark, now director of the Gorgas Memorial Laboratory in Panama City, had successfully treated a case of purpura hemorrhagica with antivenin in October, 1928, at Quigua, Guatemala.¹ His case, like the one here presented, was of so severe a nature that the man was nearly exsanguinated and not expected to live another twenty-four hours, horse serum and other treatment being of no avail.

The antivenin used in the case under discussion is marketed by the H. K. Mulford Company. It is a purified and concentrated serum globulin obtained from the blood of horses that have been highly immunized against the venom of certain tropical American serpents of the genus *Bothrops*, especially that of the fer-de-lance (*B. atrox*).

We will omit a discussion of the various conceptions of the clotting of blood, however, it may be stated that it appears to be due to the coagulation of fibrinogen or prothrombin by a fibrin ferment in the presence of calcium salts. The disintegration of the leukocytes and the necessity of the platelets also influence it in some manner. There is, too, an antithrombin normally present which prevents under normal conditions activation of the prothrombin (theory of Howell).

It is possible that some toxic substance might be the causative factor of hemorrhage in this particular case. It does not seem plausible that the destruction of tissue in the field of operation could account for the production of a toxic serum protein which, entering the blood stream, would act directly or indirectly as a hemorrhage producing agent.

Knowing that the naropharynx contains at all times a great variety of bacteria, it seems more reasonable to ascribe the formation of a possible toxic substance in this case to them.

Laboratory observations of the urine and blood were negative previous to the first operation.

Blood examination, January 4, revealed hemoglobin 70 per cent red blood cells, 3,650,000 leukocytes, 6,700 coagulation time seven minutes. From this time there was a steady fall in hemoglobin and red blood cells until February 24 when the count was erythrocytes 2,000,000 leukocytes 20,000 hemoglobin 40 per cent. The platelet count was 40,000. The bleeding time (ear) was twenty-four hours, coagulation time two and a half minutes, neutrophils were 84 per cent. No abnormal cells other than those seen in a secondary anemia were noted. February 26 the antivenin was administered. March 5 hemoglobin was 60 per cent red blood cells 3,500,000, leukocytes 9,350. March 10, the platelets were 272,000, reticulated red corpuscles 16 per cent. March 17 red blood cells 4,290,000 hemoglobin 65 per cent white blood cells 8,500 neutrophils 76 per cent. At no time was blood found in the urine, a few hyaline casts and pus cells were occasionally found. The Wassermann reaction was negative. Tests for malaria were negative. The blood type was group I, Jansky.

CONCLUSIONS

Although we cannot account for the action of antivenin in this case it appears that it might be a valuable agent in the treatment of hemorrhagic disease.

In giving the serum, it is necessary only to observe the same precautions as in giving any biologic remedy whose basis is horse serum.

MASTOIDITIS AND LATERAL SINUS THROMBOSIS IN AN INFANT

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AND

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That mastoiditis may occur at an early age without evidence of middle ear involvement has been recognized by numerous observers.¹ Of thirty-five cases of mastoiditis in children, Steinsleger² encountered nine in the range of ages from 7 weeks to 23 months. Seven of these nine cases, or 77 per cent, showed no perforation of the tympanic membrane previous to operation. Grulee³ states that sinus thrombosis in the new-born is due either to a general infection in the blood stream or to direct extension from the ear, and that it is practically impossible to differentiate it from meningitis when symptoms are present.

The following case is an example of the tender age at which these conditions may be found and of the insidious manner in which they may develop.

REPORT OF CASE

The parents had one other child, aged 6 years, in excellent health. There was no history of familial diseases. The patient, a girl, was born Sept. 22, 1929. Her birth weight

1 Wagers, A. J. Acute Mastoiditis Apparently Primary Occurring in Infant 7 months Old. *Laryngoscope* 34: 453 (June) 1924. Heggie, N. M. and Kramer, W. J. Mastoiditis Without Apparent Involvement of the Middle Ear. *J. A. M. A.* 82: 1044 (March 29) 1924. Hempstead, B. E. Mastoiditis Without Apparent Involvement of the Middle Ear. *ibid.* 81: 1266 (Oct. 13) 1923. Broder, C. B. Primary Mastoiditis. *M. Rec.* 88: 482, 1915. Kerrison, P. D. Mastoid Abscess Without Aural Discharge. *Ann. Otol. Rhin. & Laryng.* 28: 949, 1919. Wilson, W. Two Unusual Cases of Mastoiditis in Children. *Brit. M. J.* 2: 398 (Aug. 29) 1924.

2 Steinsleger, M. Mastoiditis in Infants. *Rev. de Med. Rosario* 9: 29 (March) 1919. *abstr. J. A. M. A.* 72: 1503 (May 17) 1919.

3 Grulee, C. G. *The New Born in Clinical Pediatrics*. New York: D. Appleton & Co. 3: 245, 1926.

1 Taylor, K. P. A. Apparent Cure of Purpura Hemorrhagica by Bothropic Antivenin. *Bull. Antivenin Inst. America* 3: number 2.

was 6¼ pounds (2835 Gm) Delivery was normal A slight upper respiratory infection occurred about one week prior to the last illness This lasted a few days only and was recalled with difficulty by the mother November 22 when the patient was about 8 weeks old she had been restless and vomited The family physician found a slight elevation in temperature The following day the physician was again called because of restlessness No cause for the infant's distress and fever could be found The baby was brought to the hospital on the fourth day of the illness at which time the rectal temperature was 104.6 F The anterior fontanel was soft and not bulging, there was no rigidity of the neck The nose and ears showed no evidence of inflammation The chest abdomen and extremities were normal Knee jerks were elicited, and the pupils were equally contracted and did not react to bright light The urine showed nothing abnormal A blood examination showed hemoglobin, 63 per cent red blood cells, 3,250,000, white blood cells 32,500 with 53 per cent polymorphonuclear cells, 17 per cent small lymphocytes and 9 per cent large lymphocytes Metamyelocytes were 21 per cent A roentgenogram of the chest showed signs of a pneumonitis

During the preceding twenty-four hours the baby had been nursing fairly well The temperature remained around 104 F Both ear drums were of a normal glistening gray with normal light reflex and normal landmarks There were no areas of tenderness behind the ears There was, however, a beginning tendency to incline the head toward the right shoulder but no appreciable resistance was encountered on turning the head in various positions and anterior flexion of the head was well tolerated

Lumbar puncture was done and 12 cc of turbid fluid under increased pressure was withdrawn Before the lumbar puncture needle was removed 10 cc of antimeningococcic serum was introduced into the spinal subarachnoid region Examination of the spinal fluid revealed 9,200 cells with from 90 to 95 per cent polymorphonuclear cells, a direct smear showed no organisms We believed we were dealing with a meningitis and vigorous treatment consisting of spinal drainage and introduction of serum was instituted The patient did not improve The temperature became swinging in character and frequent attacks of cynosis occurred Marked restlessness required morphine Generalized rigidity and a beginning protrusion of the right eyeball appeared together with a diminishing amount of fluid from the spinal subarachnoid region A block at the base of the brain was considered probable and the right ventricle was tapped Clear fluid was obtained with an occasional flake of fibrin A report now on the culture of the spinal fluid read 'gram-positive staphylococcus probably a contamination' Later specimens of spinal fluid were found to contain a similar staphylococcus Because of the exophthalmos which had become more pronounced a cavernous sinus thrombosis was considered The baby now was moribund Convulsions had occurred She died six days after admission to the hospital and ten days after the onset of the illness

A bacteriologic study of the spinal fluid showed a gram-positive staphylococcus which presented partial hemolysis of a brown type and produced a very pale cream pigment

A partial autopsy by Dr H W Banks pathologist at the Methodist Hospital showed that the right eye was protruding and gave a spongy sensation on pressure The right pupil was about 2 mm in diameter and the left one about 3 mm The nose and ears were normal

The brain appeared to be blanched and edematous The convolutions were soft jelly-like extremely broad and shallow Pus poured out around the base of the brain where there was also yellow opaque fibrinous and semifluid material particularly around the emergence of the cranial nerves This occurred patchily and not uniformly over the base The cerebellum was edematous but no areas of hemorrhage or exudates were seen on its surface A mass of delicate fibrin threads extended over the lateral surfaces of the brain stem and cord around the foramen magnum producing a matted effect which closed off the cranial zone from the cavity of the spinal column The right lateral sinus was completely occluded and filled with a friable ivory pink clot that was evidently old and was adherent to the walls of the sinus As

the incision in the sinus was continued around the ridge of the sphenoid to the sellar turcica, there exuded a profuse creamy, yellow pus Pressure on this region caused pus to exude from along the area of the optic tract as it entered the orbit and pressure on the eye caused about 10 cc of thick pus to exude from the tract the eye receding to its normal position

The right mastoid cells were filled with a creamy, straw-colored pus The middle ear contained some thin watery fluid The drum was intact Cultures taken from the right mastoid, the right lateral sinus and the brain showed a staphylococcus similar to the organism grown from the spinal fluid

COMMENT

Mastoiditis in children is considered less dangerous than in adults and the urgency for surgical intervention less immediate As explained by Jackson and Coates,⁴ the bony cortex in a child is thin and the direction of the inflammation is usually external, causing carious erosion of the cortex and consequent escape of pus under pressure Occasionally, as this case illustrates, the mastoid infection extends into the intracranial cavity, probably along the free communication between the lymphatic and blood vessels of the middle ear and mastoid and the interior of the skull, provided by the ununited petrosquamous suture Because of this relationship, children frequently develop an otitic meningitis or other intracranial complication without evidence that an intral lesion is present

The most important element in this infant's course was the normal appearance of the right ear drum in the presence of a mastoiditis There must have been pus under pressure in the mastoid on the third or fourth day of the illness as the first specimen of spinal fluid obtained on the fifth day contained a large amount of pus evidence that the sinus thrombosis had formed some time previously and that the infection had spread to the meninges It is probable that the mastoid infection was present on the first day of the illness the staphylococcus having been implanted there at the time of the respiratory infection one week previous to the onset of the last illness Any departure from the normal appearance of the tympanic membrane would have been in this patient, the only clue to the existing pathologic condition It seems doubtful that a mastoid operation and ligation of the internal jugular vein on the day of admission would have changed the outcome Nevertheless, that procedure would have been indicated had any clue to the mastoid infection been discovered

226 Hume-Mansur Building

4. Jackson, Chevalier and Coates C M. The Nose, Throat and Ear and Their Disorders Philadelphia W B Saunders Company 1929 p 515
5. Smith S M. in Sajous's Analytic Encyclopedia of Practical Medicine Philadelphia F A Davis Company 6 669 1914

The Structure of Neuroglia—The study of gliomatous tumors has been considerably advanced in recent years by the development and perfection of neuroglial staining methods The credit for this should be given to the Spanish school of neurohistologists notably Cajal and del Rio Hortega The methods of using gold and silver solutions or the former and the technique of silver carbonate staining with all its variations of the latter have brought to light many details of importance in the furtherance of knowledge of the structure of neuroglia To Cajal and his school is due much of the present knowledge of the histogenesis and structure of the astrocytic neuroglia, while del Rio Hortega has demonstrated clearly the histogenesis morphology and pathologic variations not only of the oligodendroglia but also of the other constituent of the third element the microglia or mesoglia These studies have clarified remarkably the knowledge of the normal structure of the neuroglia and mesoglia In so doing they have made clearer the nature of gliomas—Alperin B I. Origin and Development of Giant Cells in Gliomas Arch Neurol & Psychiat 25 281 (Feb) 1931

Clinical Notes, Suggestions and New Instruments

PRIMARY SARCOMA OF THE GALLBLADDER

ALEXANDER BRUNSCWIG MD CHICAGO

Primary sarcoma of the gallbladder is rare. Kaufmann¹ states that there are only thirteen cases on record. Landsteiner,² in 1904, was the first to summarize the literature on the subject and to that date was able to collect only six alleged cases

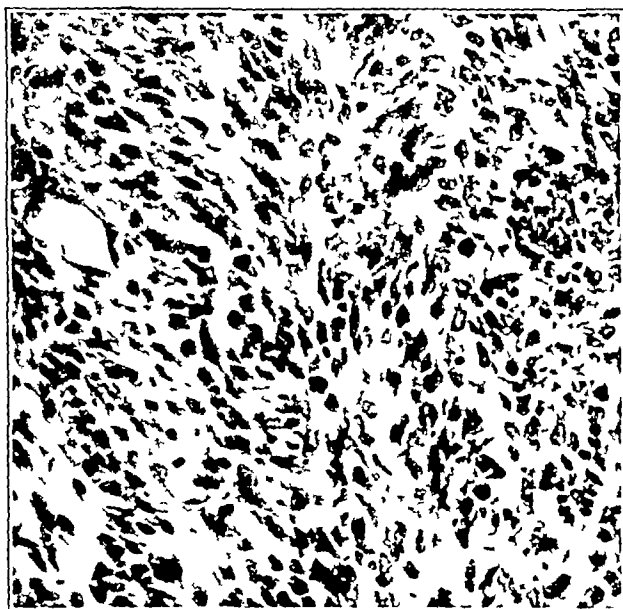


Fig 1—Section from primary sarcoma of the gallbladder showing rather densely packed moderate sized spindle cells slightly reduced from a photomicrograph with a magnification of 320 diameters

Three of these, he stated could not be definitely considered primary sarcomas of the gallbladder and in the other three the diagnosis was not finally accepted by him because the original descriptions were not available. Landsteiner's own case was a myosarcoma. At a later date he described another gallbladder exhibiting a spindle cell sarcoma and a squamous cell carcinoma.³ Bayer⁴ reported a case of myxochondro-osteosarcoma with adenomatous hyperplasia of Luschka's ducts. Parlavocchio,⁵ Hotes,⁶ Bayer,⁴ Griffon and Segal,⁷ Iwasaki,⁸ and Jaffe⁹ have each recorded a case of spindle cell sarcoma of the gallbladder in some of these, giant cells were a prominent feature. Carson and Smith¹⁰ observed a case of round cell sarcoma. Wieting and Hamdi¹¹ reported a case of melanoblastoma, and Becker¹² described a case of "endothelioma" (sarcoma?) of the gallbladder.

REPORT OF CASE

B. C., a small white woman, aged 55, entered the University of Chicago Clinics May 23, 1930, complaining of a pain in the entire right side of the abdomen of two months' duration. This was described as a dull "gas pain" and was never very severe. The pain was relieved by lying flat on the back and aggravated on standing. There was no jaundice, nausea, vomiting or constipation. The patient had lost 15 pounds (7 Kg) in the previous eight weeks and general weakness was rapidly increas-

ing. Her appetite, usually good, had become very poor during this period. Past personal and family histories were irrelevant.

The salient feature on physical examination was a large smooth tumor in the right upper quadrant and upper portion of the right lower quadrant of the abdomen. By palpation this was found to be caused by a nodular, firm tumor mass that extended from three fingerbreadths below the costal margin to the level of the right anterior superior iliac spine, medially it extended to the midline and laterally into the right flank. The liver edge could be palpated above the tumor. The mass moved with respirations and could be moved slightly by manipulation. It was not tender. Bimanual examination revealed that this tumor was not connected with the uterus or adnexa. Routine laboratory examinations were negative.

After intravenous injection of tetrathalam sodium (N. N. R.) there was nonvisualization of the gallbladder. Barium fluoroscopy of the stomach and duodenum showed a displacement of these structures to the left by the tumor mass, a barium enema showed the hepatic flexure of the colon to be displaced downward. Films of the kidney, ureter and bladder showed normal kidney shadows and no stones.

Exploratory laparotomy was performed by Dr. L. R. Dragstedt June 4. A right rectus incision was made and a small amount of colorless fluid escaped when the peritoneum was incised. A large hard tumor mass was found in the right upper quadrant primary in the right lateral wall of the gallbladder and extending into the right lobe of the liver. The gallbladder was enormously dilated, being about four times the normal size. About 50 cc of colorless fluid was aspirated from the distended gallbladder. No stones were palpated in the bile passages. A small portion of the tumor mass was excised from the gallbladder wall for microscopic examination and the abdomen closed.

The patient was discharged from the hospital, June 24. Her general condition was fair. Marked weakness persisted and it was thought the tumor mass had increased slightly in size.

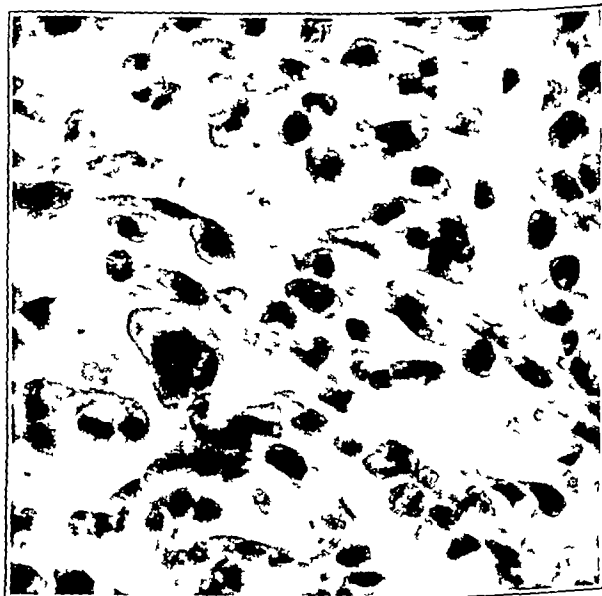


Fig 2—Section from primary sarcoma of the gallbladder showing area of round cells and two large tumor giant cells slightly reduced from a photomicrograph with a magnification of 625 diameters

Because of increased abdominal pain, further emaciation and weakness, the patient was readmitted to the hospital, July 10. The tumor mass had markedly increased in size, filling almost the entire abdomen and forming a smooth, firm, fixed protrusion. She was discharged again, July 29, temporarily relieved from pain, and several days later word was received that she had died. Necropsy was not obtained.

PATHOLOGIC STUDY

Sections of the fragment of tumor removed at operation showed areas of moderate sized spindle shaped cells with oval

* From the Department of Surgery, University of Chicago.
1 Kaufmann Pathology for Students and Practitioners translated by Reinmann Philadelphia P. Blakiston's Son & Co 2 1002 1929
2 Landsteiner Wien klin Wchnschr 1904 number 6 p 163
3 Landsteiner Ztschr f klin Med 62 427 1907
4 Bayer Beitr z path Anat u z allg Path 46 1909
5 Parlavocchio Arch f klin Chir 87 365 1908
6 Hotes Inaug Diss Leipzig 1910 (quoted by Iwasaki)
7 Griffon and Segal Bull Soc anat de Paris 72 586 1897
8 Iwasaki Arch f klin Chir 104 84 1914
9 Jaffe Zentralbl f Path 29 571 (March) 1921
10 Carson and Smith Ann Surg 62 688 1915
11 Wieting and Hamdi Beitr z path Anat u z allg Path 42 23 1907
12 Becker Wilhelm Primary Endothelioma of the Gallbladder J A M A 40 903 (April 4) 1903

and rounded finely stippled nuclei. Between these cells were fine collagenic fibrils. Elsewhere there were dense strands of collagenic tissue separating small groups and strands of elongated spindle cells many of which were here indistinguishable from normal fibroblasts. There were regions in which round cells were predominant; these had a small amount of cytoplasm and moderate sized round or oval nuclei. A number of large multinucleated tumor cells were also present (giant cells). Numerous mitotic figures were seen among the round and spindle shaped cells.

The diagnosis was spindle cell sarcoma (with areas of round cells) of the gallbladder.

COMMENT

The rarity of primary sarcoma of the gallbladder may be more apparent than real, for many large tumor masses arising in the gallbladder, and found on exploration to be inoperable have no doubt gone without biopsy, the gross diagnosis of carcinoma being made. An analysis of the histories of the reported cases fails to disclose a clinical syndrome that may afford a basis for preoperative diagnosis of primary sarcoma of the gallbladder.

Of the thirteen cases referred to by Kaufmann, ten also exhibited cholelithiasis. In the case I have reported, as stated cholelithiasis was not present as far as could be determined at operation.

950 East Fifty Ninth Street

SHOE-DYE POISONING REPORT OF A CASE IN AN
EIGHT MONTHS OLD INFANT*

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Shoe dye poisoning is relatively uncommon in children. Riviere¹ reported eleven cases of cyanosis in children 1½ to 10 years of age following the dyeing of shoes with a dye containing aniline. Muehlberger² reported two cases in children of 3½ and 6 years of age. Ullmann³ has called attention to the fact that children are especially susceptible to shoe-dye poisoning. Recently I reported a case of shoe dye poisoning in a child of 2 years, at that time the youngest patient in the American literature.⁴ The following case in an 8 months old infant is I believe, the youngest reported case of this interesting condition.

D. C., a girl aged 8 months white was admitted to the Children's Hospital Sept 3 1928 because of fainting and turning blue. She had had a full term, normal delivery with no cyanosis or convulsions. She had been breast fed for six months and was given a normal diet at the time of observation. She had always been perfectly well; she had had no similar attacks, convulsions or fainting spells.

Her parents were both well, with no history of epilepsy, allergy, tuberculosis or syphilis.

At 11 30 a. m., September 3 the child suddenly fell over backward in her highchair and five minutes later became unconscious. It was noted that she was then getting darker and she was immediately brought to the Children's Hospital.

On entering the patient's room one was immediately struck by a strong sweetish chemical odor. The infant was lying quietly in bed semicomatose but easily aroused. There was no odor of acetone on the breath. She was well developed and well nourished. The skin and lips had a peculiar cyanotic somewhat grayish blue color. The tongue was clear, the mucous membranes were a dusky bluish color. The tonsils and the pharynx were normal. There were no enlarged glands in the neck. The chest was of normal size and shape with equal expansion on the two sides and a normal resonance throughout. The breath sounds were clear; there were no rales. The heart was not enlarged and had a rate of 110; the heart sounds were normal; there were no murmurs. There were no masses and there was no rigidity or tenderness in the abdomen. The

bones and joints were normal. An examination of the nervous system revealed no neck rigidity, Kernig's or Brudzinski's sign. The reflexes were normal. A laboratory report of the blood showed hemoglobin 60 per cent, red blood count, 4,250,000 white blood cells 17,500, polymorphonuclears, 72 per cent. The temperature was 99.6 F. The urine was negative for albumin, sugar, acetone and urobilinogen.

The shoes of this infant which had just been removed, exuded the same peculiar odor that was noticed on entering the room. The canvas uppers had apparently been painted with a black dye, being still moist. The mother subsequently said that because the white canvas uppers were soiled she had dyed them black that morning and after waiting one hour had put them on the baby. The symptoms appeared after the shoes were worn only one hour.

Venous blood was withdrawn for examination. It was dark brown and did not become redder when shaken up with air. Spectroscopic examination showed a faint but typical methemoglobin band. The infant was treated with fresh air and oxygen and was apparently normal in twenty-four hours.

The solvents used in shoe dyes, either aniline or nitrobenzene have each been said to produce methemoglobinemia. In the cases reported in infants in which cyanosis followed the wearing of recently marked clothing aniline⁵ was isolated from the stamping ink in one series of cases and nitrobenzene in another.⁶ Methemoglobin was reported in the blood of the infants of both series by spectroscopic examination.

Muehlberger² in 1925, analyzing the forty eight cases of shoe dye poisoning reported up to that time in the American and European literature found that in the twenty-five American cases nitrobenzene was the chief toxic agent. He found that aniline was the chief toxic agent in the European cases reported.

In the ten cases which he reported at that time Muehlberger found that six were due to aniline, these being the first to be reported in this country. Pateh⁷ has since reported three more cases due to aniline.

It is now well known that absorption of aniline and nitrobenzene occurs through the skin with resultant symptoms like those found in shoe-dye poisoning. The chief manifestations are weakness, vertigo, somnolence, digestive disorders, headaches and cyanosis. The blood is dark, chocolate brown almost black.

Both aniline and nitrobenzene are extremely toxic. For this reason a number of manufacturers of shoe dye have used other supposedly less toxic solvents. The solvent present in the dye used in this case was 20 per cent orthotoluidine. In the report⁸ of a series of experiments which he conducted for the manufacturer of this shoe dye Muehlberger found 30 per cent orthotoluidine to be much less toxic than aniline. Rabbits developed only slight cyanosis when the substance was applied to the shaved abdominal surface. He subsequently dyed the shoes of six young adults who continued to wear the shoes for a period of from ten to fifteen hours after the application of the dye. In no case were there any noticeable symptoms of poisoning. Muehlberger concluded that for the average person a shoe dye containing 30 per cent orthotoluidine as a solvent is nontoxic.

COMMENT

Although 30 per cent orthotoluidine is apparently nontoxic for adults as a solvent for shoe dye severe symptoms were produced within an hour in an infant despite the use of a dye containing only 20 per cent of this substance. It may be reasonable to assume that the wearing of freshly dyed shoes remains a menace to infants.

CONCLUSIONS

1. A case of shoe dye poisoning in an 8 months old infant was observed. This is believed to be the youngest patient in the literature.

2. Despite the use of orthotoluidine as a solvent in this shoe dye a 20 per cent solution is apparently as toxic for infants as the aniline or nitrobenzene solvents formerly used.

Macacabee Building

* From the Children's Hospital.
1. Riviere, C. *Ann. de med. et chir. inf.* 15: 531, 1911.
2. Muehlberger, C. W. *Shoe Dye Poisoning*. J. A. M. A. 84: 1987 (June 27) 1925.
3. Ullmann, H. *Deut. che. med. Wchn. chr.* 52: 998 (June 11) 1926.
4. Levin, S. J. *Shoe Dye Poisoning—Relation to Methemoglobin Formation. Report of a Case in a Two-Year Old Child*. J. A. M. A. 89: 2178 (Dec. 24) 1927.
5. Newland, W. *Med. Klin.* 17: 903 (July 24) 1921.
6. Ewar, H. *Deutsche med. Wchn. chr.* 16: 1045 (Sept. 23) 1920.
7. Pritch, A. J. *Aniline Shoe Dye Poisoning*. J. A. M. A. 86: 944 (March 27) 1926.
8. A copy of the original report by Dr. Muehlberger was sent to the author by the manufacturer of the shoe dye used in this case.

Special Article

THE COSTS OF MEDICAL EDUCATION

STUDENTS' EXPENDITURES *

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It was inevitable that during the centuries while medicine was becoming integrated from meaningless bits of folk-ways, mysterious superstitions and primitive incantations into an orderly array of logical demonstrable truths, little should be recorded as to the cost of obtaining the information necessary to qualify one as a physician. Moreover, there is consistency in the finding that search for and interpretation of facts

training thus gained. To be sure, an individual trained in the thinking and investigating process should continue his education throughout life, but his actual college days are usually limited, to a degree, by the amount of time and money he feels he can invest and the readiness with which he can later adjust himself with his new equipment.

Were it possible to assemble data on the cost of medical education, from the time when Democedes founded the first medical school in Athens in 522 B. C. to the present, some interesting and doubtless valuable ratios might be found. Cost must of necessity increase with the expansion of medical education requirements. On the other hand, if students are to be expected to bear the increasing cost of medical education there is danger that the profession may become limited to the sons of the well-to-do.

Information for this study of the cost of medical education was drawn from every geographic subdivision

TABLE 1.—Cost of Medical Education, 1929-1930. Tabulation
(Enrollment by Year for

Name of Medical School	Enrolment	First Year				Enrolment	Second Year				Total
		Reports Returned					Reports Returned				
		Single	Married	Home	Total		Single	Married	Home	Total	
1 Alabama School of Medicine Univ. of University (Tuscaloosa)	52	11			11	1			6	1	
2 Arkansas School of Medicine University of Little Rock	6					5	1			2	
3 Baylor University College of Medicine Dallas Texas	12	1		1	16	8			30	4	
4 Chicago Rush Medical College University of Chicago	63	7		1	6	48			14	5	
5 Colorado School of Medicine University of Denver	11	5		7	12	10		1	6	7	
6 Columbia University College of Phys. and Surgs. New York	23				5	16				6	
7 Dartmouth Medical School Hanover New Hampshire	17	17			17	4				8	
8 Emory University School of Medicine Atlanta Georgia	12	2		1	70	76			24	9	
9 Evangelists College of Medical Iowa India-Los Angeles Calif	50	14			14	42			7	10	
10 Georgia Medical Department University of Augusta	12	11		1	12	123		1	2	11	
11 Harvard University Medical School Boston	58	2			2	53			50	12	
12 Howard University School of Medicine Washington D.C.	17	2			2	15			14	13	
13 Illinois College of Medicine University of Chicago	17	2			2	15			14	14	
14 Indiana University School of Medicine Bloomington Indianapolis	110	7		1	8	94			1	15	
15 Jefferson Medical College of Philadelphia	1	16		1	17	148		1	26	16	
16 Johns Hopkins University School of Medicine Baltimore	71				72	1			1	17	
17 Kansas School of Medicine University of Lawrence Kansas City	71				72	1			1	18	
18 Michigan Medical School University of Ann Arbor	100	5		1	61	143		1	34	19	
19 Minnesota Medical School University of Minneapolis	12				14				20	20	
20 Mississippi School of Medicine University of University	23				25				21	21	
21 Missouri School of Medicine University of Columbia	40	1		1	2	4			6	22	
22 Nebraska College of Medicine University of Omaha	100	9			12	84			7	23	
23 North Carolina School of Medicine University of Chapel Hill	41	11			11	41			3	24	
24 Northwestern University Medical School Chicago	12	12		1	17	127		1	14	25	
25 Ohio State University College of Medicine Columbus	101				70	12			25	26	
26 Oregon Medical School University of Portland	64			2	5	58		1	3	27	
27 Pittsburgh School of Medicine University of Pennsylvania	17	10		6	21	17			10	28	
28 Rochester School of Medicine University of New York	42	1			5	37			2	29	
29 South Carolina Medical College of the State of Charleston	42				37	2			1	30	
30 Stanford University School of Medicine San Francisco	51				40	1			1	31	
31 Texas School of Medicine University of Galveston	107				82	14			14	32	
32 Tulane University of Louisiana School of Medicine New Orleans	132				7	10		1	11	33	
33 Utah School of Medicine University of Salt Lake City	31	7		1	9	20			9	34	
34 Vermont College of Medicine University of Burlington	7	6			6	42			14	35	
35 Virginia Dept. of Medicine Univ. of University (Charlottesville)	7	41		1	42	64			21	36	
36 Washington University School of Medicine St. Louis	5	4			4	71			2	37	
37 West Virginia University School of Medicine Morgantown	17				43				37	38	
38 Wisconsin Medical School University of Madison	118	8		1	99	9		2	1	39	
39 Woman's Medical College of Pennsylvania Philadelphia	41	1			6	2			6	40	
40 Yale University School of Medicine New Haven	42	9		1	10	61		2	10	41	
Total	3,219	48		28	381	2,732	4	1	880		

bearing on vital processes have been uppermost in the minds of the great teachers and investigators.

There is reason to hope that those qualities which characterized our medical ancestors as indomitable searchers for truths may forever be perpetuated. But in a world of increasing social and economic complexities it is no longer possible to disregard cost. Honesty of purpose and integrity of action will always be high values in character, but there must be a limit to which any educational process should be carried for the individual who must later seek his livelihood from the

of the United States, medical schools located in small cities and large metropolitan areas, state and non-state operated universities, long established and of more recent organization, and universities for both white and Negro students.

The expense data cover only the four years of required medical work. The cost of premedical training was omitted, since a measure of such expenditures would tend to be quite arbitrary. Preliminary college preparation is pursued in such a variety of schools and colleges and the range of work taken and time spent is so variable that it was thought best not to include any preliminary college work. Likewise, the cost of postgraduate and intern training has been omitted. Although the cost of postgraduate work may closely parallel

* This discussion of the cost of medical education is limited to the amounts paid by the student toward a medical education and does not include the cost to either medical schools or hospitals in providing facilities for a medical education. All references to the cost of medical education in this article must be understood to carry this limitation.

undergraduate education in many respects, postgraduate study does not apply to all students and it may extend over widely varying lengths of time. The intern, in many instances, is in reality practicing medicine under direction, although not always licensed, and he usually receives compensation which largely or completely covers any expense.

Early in 1929, forty medical schools located in the several geographic subdivisions of the United States approved of the plan to study one phase of the cost of medical education by means of students' expense books and offered to place these books in the hands of all medical students who would volunteer to keep the record. They also offered to supervise the recording of data and to maintain, as well as possible, through a member of the faculty, an interest in the project.

In nearly every instance the dean of the medical school voiced his doubt that all medical students would cooperate and, therefore, books were furnished only to

in other instances the returns were disappointing. Six schools failed to return any expense books. The total number of expense books which were found complete and which showed a degree of accuracy necessary for inclusion in the study was 1,253. This number, although representing a precariously small percentage for a detailed statistical study, is nevertheless sufficient from which to derive some significant hints as to the trend of the costs of medical education.

With a relatively small number of returns it becomes more and more difficult to arrive at as accurate deductions as could be made had the percentage approached more nearly 100. However, an attempt has been made to point out a few items of interest, as follows:

1 The variation, if any, in the cost of medical education to students as to the class year in the several geographic subdivisions of the United States.

2 The apparent cost of each of the several major expense items which contribute to the cost of the medical education

of Reports by Medical Schools According to Year of College Each School is Given)

Third Year					Fourth Year				Year Not Stated			Total				
Enrolment	Reports Returned				Enrolment	Reports Returned			Reports Returned			Enrolment	Reports Returned			
	Single	Married	Home	Total		Single	Married	Home	Single	Home	Total		Single	Married	Home	Total
1												103	16			1
2	33	1		1	30							162	1			1
3	77	0	3	12	87	14					14	371	68		4	72
4	141	22	2	24	203	4					4	344	27		2	29
5	51	8	1	9	43	4					4	205	72		1	36
6	102	3		3	104							423	11		10	21
7												39	5			5
8	48	7		7	40	1	1				2	196	31		1	38
9	81	27		22	78	2					2	310	77		1	78
10	20	2		2	70	2					2	140	28		1	29
11	131	9	1	12	137	4					4	516	32		6	38
12	58	34	1	35	68	4					4	241	94		1	95
13	128				120							149	2			2
14	106				105							424	7		1	8
15	143	27	2	24	140	11		2			13	586	78		6	84
16	72	1		1	70							283	2			2
17	54				49							213				
18	110	70		30	166						5	639	110		1	111
19	113				100							628				
20												66				
21												74	3		1	4
22	67	8	1	9	65	9	1	1			4	316	20	4	2	32
23												82	14			14
24	130	9	3	13	177		1				3	22	30			41
25	79				61							311				
26	60	9	1	10	47		1				1	227	15		1	21
27	66				60						2	260	37		7	40
28	34	2		2	24	2					2	110	9			9
29	41	1		1	37	1					1	119	3			3
30	43				49							107				
31	77	5		5	45	34	2	2			38	108	56		2	60
32	103			7	100	18		6			24	47	47			4
33												61	17	1	1	19
34	1	2		2	30						1	114	22			2
35	49	22		22	79	93					2	215	107		1	108
36	78	1		1	77						1	110	8			8
37												110				
38	48	8	1	9	39						7	204	31		5	41
39	24	2		2	11							111	10			10
40	54	12		12	55			1			6	212	41		4	4
	2,524	238	4	16	2,472	144	6	12	10	0	2	10,947	1,161	11	3	1,185

approximately 70 per cent of the school enrolment. Altogether, 7,200 expense books were sent to forty medical schools, having an enrolment for 1929 of 10,947 students. In a few instances additional books were sent on request of the dean. There was no direct contact between the American Medical Association headquarters and the students; the presentation of the subject and all subsequent follow-up contact to insure the largest number of returns and the greatest possible accuracy were through the dean or a member of the faculty of the student's own school. It is impossible, therefore, to make any statement or explanation concerning the number of returns credited to each school.

The percentage of books itemized throughout the year and returned from some schools was satisfactory,

3 The variation in the cost of each of the several major expense items according to class periods.

4 The distribution by expense intervals according to class periods and geographic subdivisions.

5 The distribution of the major expense items and magnitude groups according to the fractional percentage of the total cost.

These items do not represent the limit of inquiries for which an answer might be sought in the assembled data, but for general information, the five that have been outlined seem adequate. In all statistical procedures the probable error becomes larger the smaller the percentage of possible returns available, and therefore any conclusions drawn from the present study must be made very guardedly. Nevertheless, an effort has been made to present faithfully the expense data actually recorded.

and reported by 1 161 medical students for the college year 1929 and 1930. Neither the medical profession, the statistician, nor the public should be too exacting or critical of the apparent conclusions.

Examination of these reports indicates that, of the 1,253 students who returned itemized expense books, 19 were married and 73 were living at home. Obviously, the demands on the married students differ sufficiently from those made on the single students to cause these reports to be excluded from the tabulations. Because of the reduction in board room laundry and a number of other miscellaneous items it would be not only unfair but also statistically dishonest to include in the study the expenses of those living at home. There-

Howard University School of Medicine, Washington D. C., to \$1 342 64 for Jefferson Medical College, Philadelphia. Based on the percentage of enrolment, however, the returns of other schools should be considered in this connection, namely, Alabama School of Medicine, Colorado School of Medicine, Emory University School of Medicine, the University of Georgia Medical Department, North Carolina School of Medicine, Pittsburgh School of Medicine, Utah School of Medicine, and Yale University School of Medicine. Although the total number of reports returned from these schools was smaller than for some they represent a higher percentage of the school's enrolment and therefore may be accepted more readily as indicative of actual cost in

TABLE 2—Cost of Medical Education 1929-1930

No	Name of Medical School	1st Year		2d Year		3d Year		4th Year		Year Not Stated		Total		
		Enrolment	Returned	Enrolment	Returned	Enrolment	Returned	Enrolment	Returned	Enrolment	Returned	Enrolment	Returned	Per Cent Returned
1	Alabama School of Med. Univ. of University (Tuscaloosa)	12	11	1	0							107	16	15.1
2	Arkansas School of Medicine University of Little Rock	11	11	4	0	1	20					162	1	0.6
3	Baylor University College of Medicine Dallas Texas	123	11	68	0	1	57	14				311	68	18.4
4	Chicago Rush Medical College University of Chicago					141	22	20	4			344	71	18.3
5	Colorado School of Medicine University of Denver	63		48	16	1	8	4		1		70	3	16.1
6	Columbia University College of Phys. and Surge New York	111		107	1	107	1	104				423	11	7.6
7	Dartmouth Medical School Hanover New Hampshire	23		16								29		19.8
8	Emory University School of Medicine Atlanta Georgia	7	17	4	2	48	7	4	1			108	37	18.9
9	Frangelists College of Medical Loma Linda Los Angeles	129	29	24	87	22	20	2		10		370	77	20.8
10	Georgia Medical Department University of Augusta	9	14	42	21	2	20	2				140	28	20.0
11	Harvard University Medical School Boston	121	11	171	6	131	1	17	4			316	32	6.1
12	Howard University School of Medicine Washington D. C.	8	2	17	10	8	34	4		1		241	94	20.4
13	Illinois College of Medicine University of Chicago	17	11	128	178	120						549	12	1.1
14	Indiana University Sch. of Med. Bloomington Indianapolis	119	7	74	106	101						424	7	1.1
15	Jefferson Medical College of Philadelphia	133	16	148	21	14	2	140	11	4		380	78	1.3
16	Johns Hopkins University School of Medicine Baltimore	67		12	1	72	1	70				283	2	0.1
17	Kansas School of Medicine Univ. of Lawrence Kansas City	71		9	14	4	41					713		0.0
18	Michigan Medical School University of Ann Arbor	160	59	14	63	110	30	160				129	130	20.0
19	Minnesota Medical School University of Minneapolis	172		14	11			100				128		0.0
20	Mississippi School of Medicine University of University	38		28								66		0.0
21	Missouri School of Medicine University of Columbia	40	1	4	2							74	3	4.1
22	Nebraska College of Medicine University of Omaha	100	9	84	7	67	8	6				316	26	8.9
23	North Carolina School of Medicine Univ. of Chapel Hill	41	11	41								82	14	17.1
24	Northwestern University Medical School Chicago	171	12	127	12	18	0	1	0	3		22	39	7.0
25	Ohio State University College of Medicine Columbus	101		70		10	61					311		0.0
26	Oregon Medical School University of Portland	44		68	2	60	4			1		221	10	6.6
27	Pittsburgh School of Medicine University of Pennsylvania	67	20	17	1	66	60	2				260	39	10.0
28	Rochester School of Medicine University of Rochester N. Y.	42		2	34	2	24	12				103	9	6.8
29	South Carolina Medical College of the State of Charleston	42		19	1	41	1	37	1			103	3	1.9
30	Stanford University School of Medicine San Francisco	61		40		40						193		0.0
31	Texas School of Medicine University of Galveston	107	7	81	14	1	4	24				208	56	18.1
32	Tulane University of Louisiana School of Med. New Orleans	132	7	107	10	10	7	100	18			4	47	10.9
33	Utah School of Medicine University of Salt Lake City	31	7	30	9					1		61	17	2.9
34	Vermont College of Medicine University of Burlington	53	6	42	14	31	2	20				106	22	14.1
35	Virginia Dept. of Med. Univ. of University (Charlottesville)	73	41	64	21	49	22	29	21			241	107	40.1
36	Washington University School of Medicine St. Louis	82	4	71	2	78	1			1		108	8	2.6
37	West Virginia University School of Medicine Morgantown	67		43								110		0.0
38	Wisconsin Medical School University of Madison	118	8	10	9	48	8	30		7		104	37	17.1
39	Woman's Medical College of Pennsylvania Philadelphia	44	6	33	2	24	2	10				116	10	8.6
40	Yale University School of Medicine New Haven Conn.	42	9	61	11	34	12	0		4		212	41	19.3
Total		3 219	348	2 732	361	2 324	2 388	2 472	144	70		10 941	1 161	10.6

fore, the figures shown in tables 2, 3, 4, 5, 6 and 7 are for unmarried students living away from home. This number totals 1,161 (table 1).

The number of returns for this group (unmarried and not living at home), based on each college enrolment, varied from 0.4 per cent to 43.7 per cent. The number of returns and the enrolment according to the college year and the total for each school, is found in table 2.

The number of reports from several schools was so small that the average, either for the total amount expended for the year or for the expense for each class year, cannot be accepted as statistically dependable, it should be used simply as an interesting trend. In the case of seven schools, however, each of which returned more than fifty reports the results call for more than passing notice. The total average expense to students recorded from these schools varies from \$902.16 for

these institutions. The average expense of these eight schools varies from \$811.63 for the University of Georgia Medical Department to \$1,446.63 for Yale University School of Medicine. It would appear, therefore, that the low average annual student expense for a single medical school is found among the South Atlantic states although the Pacific and Mountain states are in the lowest range and the high average lies between the New England and Middle Atlantic states. An average taken by class periods seems to indicate that the amount expended by sophomores is lowest, \$1,114.58, whereas seniors seem to have the heaviest expenses, \$1,242.76. This difference is not as great as might be expected.

Except in one or two instances the number of returns according to class periods is altogether too small to make any safe or accurate comparison between schools or geographic subdivisions. The averages therefore shown in table 3 must be accepted as indic-

tive of the experiences of only as many as are represented by the returns received

The annual cost of each of the several major expense items that contribute to the cost of medical education shows in some instances a fairly wide variation (table 4)

That portion of the student's expense paid for tuition and fees is beyond his control once the selection of a medical school has been made. There is,

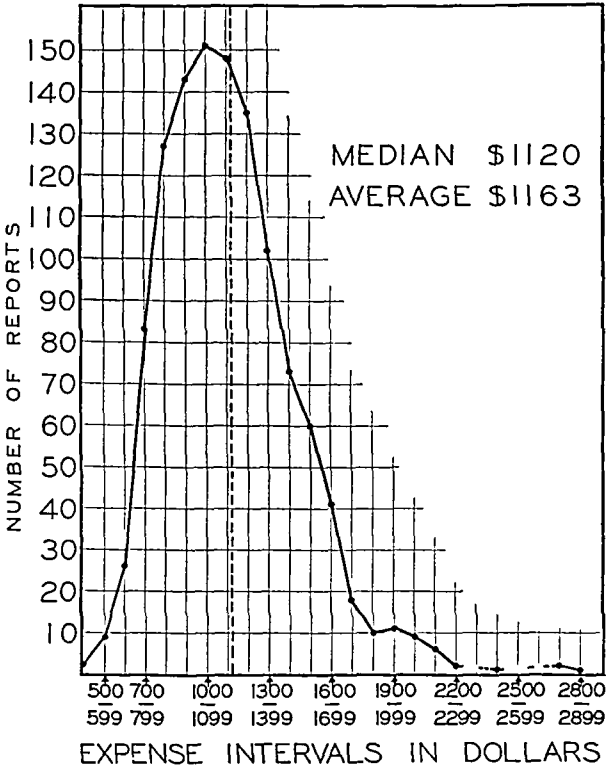


Chart 1—Graphic representation of 1161 expense reports according to the number in each magnitude group or expense interval

however, a wide choice of schools as far as tuition and fees are concerned. A number of factors seem to operate in the great diversity of this expense item. There are several schools that offer only the first two years of medical training. The tuition and fees in these schools varies from \$50 to \$410 a year. Among the schools conducting a full medical course the annual charge for tuition and fees extends from \$66 to \$610. Twenty-seven universities, mostly state institutions charge an additional fee for students who are non-resident in the state. These nonresident charges vary from \$10 a term to \$300 a year. Thirteen of the universities in the present study have additional charges for nonresidents.

Among the reports returned in this study 172 were found to be from nonresident students of the following ten medical schools (the number of nonresident students is given after each school)

- University of Arkansas School of Medicine 1
- University of Colorado School of Medicine 8
- University of Indiana School of Medicine 1
- University of Michigan Medical School 66
- University of Missouri School of Medicine 2
- University of Nebraska School of Medicine 12
- University of Oregon Medical School 2
- University of Vermont College of Medicine 14
- University of Virginia Department of Medicine 64
- University of Wisconsin Medical School, 2

The average annual cost of tuition and fees in the medical schools enumerated will not bear a parallel comparison with the remaining averages shown in table 4 under tuition and fees since the averages in these ten schools is increased by the extra charges paid by the nonresident students.

Making necessary corrections for the nonresident students' fees it is found that the lowest fees of the medical schools included in this study are those paid by students in the University of Texas School of Medicine and the highest amounts are paid at Johns Hopkins University School of Medicine.

The average of the amount expended for medical books, instruments, medical journals, and the like, has a range which lies between \$66.57 found as an average for fourteen students at the University of North Carolina School of Medicine, and \$188.83 the average for sixteen students at the University of Alabama School of Medicine. Sixteen of the thirty-four schools reporting showed an average expenditure for this item of more than \$100, while eighteen showed an expenditure of less than \$100.

Board and room was considered jointly, since the arrangement in many places is to pay for board and room in a single sum. Many of the students, therefore did not separate the amounts paid for each item and it

H	2.5 PER CENT
G	5.3 PER CENT
F	5.9 PER CENT
E	6.4 PER CENT
D	9.0 PER CENT
C	11.8 PER CENT
B	25.7 PER CENT
A	33.4 PER CENT

Chart 2—Average annual total cost distributed according to percentage paid for each major expense group. Major expense groups: A board and room 1161 reports average \$388.54; B tuition and fees 1161 reports average \$298.60; C clothing and laundry 1159 reports average \$137.30; D medical books, journals, instruments, etc. 1159 reports average \$103.68; E recreation 1119 reports average \$77.63; F travel 1119 reports average \$70.99; G miscellaneous 1148 reports average \$62.22; H insurance and interest 443 reports average \$77.45.

was possible to consider them only as a joint expense. The expenditure for this item shows a low average of \$271.75 from the University of Illinois College of Medicine and a high average of \$569.45 representing thirty-two reports from the Harvard University Medical School. Again the low average for Illinois is

not dependable, since only two reports were received. Clothing and laundry were combined for the same reason, and this item shows a variation of from \$61.68 for the University of Missouri School of Medicine to \$178.61 found as the average of forty-seven reports from Tulane University of Louisiana School of Medicine. The \$61.68 represents an expenditure of only three students which cannot be accepted as altogether representative. One other lower average of \$50.46 was reported by one student of the University of Arkansas School of Medicine.

person lending the money are legitimate inclusions, since the principal sum makes possible the pursuit of the educational courses. Presumably the 718 students who did not report expenditures for insurance and interest either earned the money or received it as a gift. The expenditure for this item varied from \$29.83, the average reported by three students from the University of Missouri School of Medicine, to \$114.58, the average of seventeen reports from the Tulane University of Louisiana School of Medicine. It will be seen from the table that two lower expenditures, one of \$9.44 and

TABLE 3—Cost of Medical Education, 1929-1930

Medical Schools Arranged According to Geographic Subdivisions of the United States		First Year				Second Year			
		Number Registered	Reports Returned	Amount Reported	Average	Number Registered	Reports Returned	Amount Reported	Average
NEW ENGLAND									
7	Dartmouth Medical School Hanover N.H.	23	5	\$8,570	\$170.7	16	7	\$141.34	\$120.6
11	Harvard University Medical School Boston	123	11	18,847	1,532	12	1	17,080.04	1,421.34
34	Vermont College of Medicine University of Burlington	11	6	6,890	1,148.27	42	14	17,440.05	1,354.4
40	Yale University School of Medicine New Haven Conn.	42	9	14,100	1,345.1	61	11	17,440.05	1,354.4
MIDDLE ATLANTIC									
6	Columbia University College of Physicians and Surgeons New York	113	3	7,082.00	1,410.4	102	3	4,223	1,411.11
15	Jefferson Medical College of Philadelphia	11	10	2,137.40	1,854.4	145	2	31,092.60	1,791.15
27	Pittsburgh School of Medicine University of Pennsylvania	67	20	28,481.48	1,424.07	67	1	20,116.7	1,306.45
28	Rochester School of Medicine University of Rochester N.Y.	42	2	7,821.11	1,240.04	23	2	2,034.83	1,114.43
39	Woman's Medical College of Pennsylvania Philadelphia	44	6	6,880.11	1,141.16	23	2	2,006.00	1,003.00
EAST NORTH CENTRAL									
4	Chicago Rush Medical College University of Chicago	17	2	1,646.77	\$0.9	128	9	1,111.11	1,111.11
13	Illinois College of Medicine University of Chicago	119	7	5,918.12	\$49.70	94	1	1,111.11	1,111.11
14	Indiana University School of Medicine Bloomington Indianapolis	100	7	11,000.77	1,111.11	141	7	1,111.11	1,111.11
18	Michigan Medical School University of Ann Arbor	12	1	10,000.00	1,341.1	127	1	10,000.00	1,341.1
24	Northwestern University Medical School Chicago	101	1	10,000.00	1,341.1	70	1	10,000.00	1,341.1
25	Ohio State University College of Medicine Columbus	118	8	7,481.12	630.90	69	9	8,000.00	800.00
30	Wisconsin Medical School University of Madison	71	1	1,111.11	1,111.11	147	1	1,111.11	1,111.11
WEST NORTH CENTRAL									
17	Kansas School of Medicine University of Lawrence Kansas City	172	1	1,111.11	1,111.11	147	1	1,111.11	1,111.11
19	Minnesota Medical School University of Minneapolis	40	1	80.6	80.6	4	1	1,111.11	1,111.11
21	Missouri School of Medicine University of Columbia	100	9	8,111	941.28	84	7	7,740.27	900.00
22	Nebraska College of Medicine University of Omaha	82	4	4,811.01	1,137.50	71	2	2,111.11	1,111.11
36	Washington University School of Medicine St. Louis	7	17	10,000.00	988.8	43	12	2,111.11	1,011.11
SOUTH ATLANTIC									
8	Emory University School of Medicine Atlanta Ga.	10	14	11,000.00	\$78.6	42	7	4,111.11	1,000.00
12	Howard University School of Medicine Washington D.C.	75	1	1,000.00	78.62	7	3	4,111.11	1,000.00
16	Johns Hopkins University School of Medicine Baltimore	49	1	1,000.00	78.62	72	1	1,000.00	1,000.00
23	North Carolina School of Medicine University of Chapel Hill	41	11	10,000.00	961.00	41	1	1,000.00	1,000.00
29	South Carolina Medical College of the State of Charleston	42	1	1,000.00	78.62	20	1	1,000.00	1,000.00
35	Virginia Department of Medicine University of University	7	41	80,000.00	1,107.0	11	21	2,111.11	1,000.00
37	West Virginia University School of Medicine Morgantown	6	1	1,111.11	1,111.11	4	1	1,111.11	1,111.11
EAST SOUTH CENTRAL									
1	Alabama School of Medicine University of University (Tusculum)	12	11	12,334.7	1,111.77	61	5	1,000.00	1,121.84
20	Mississippi Medical School University of University	8	1	1,111.11	1,111.11	28	1	1,111.11	1,111.11
WEST SOUTH CENTRAL									
2	Arkansas School of Medicine University of Little Rock	106	1	10,111.16	1,082.68	43	1	1,111.11	1,111.11
3	Baylor University College of Medicine Dallas Tex.	121	1	2,614.46	814.49	83	14	12,000.00	881.28
31	Texas School of Medicine University of Galveston	107	7	5,148.71	1,164.10	83	14	12,000.00	881.28
32	Tulane University of Louisiana School of Medicine New Orleans	132	7	5,148.71	1,164.10	83	14	12,000.00	881.28
MOUNTAIN									
5	Colorado School of Medicine University of Denver	61	5	4,900.20	981.44	48	10	10,620.00	1,019.34
33	Utah School of Medicine University of Salt Lake City	31	7	1,000.00	810.69	30	1	7,000.00	881.02
PACIFIC									
9	Evangelists College of Medical Arts and Science Los Angeles	129	29	28,131.46	970.0	76	4	24,000.00	1,041.00
26	Oregon Medical School University of Portland	64	3	2,900.00	774.60	58	2	2,481.04	1,041.00
30	Stanford University School of Medicine San Francisco	61	1	1,111.11	1,111.11	50	1	1,111.11	1,111.11
Total		3,710	348	\$404,880.00	\$113.44	2,700	161	\$402,001.08	\$111.58

The item of travel introduced the unknown factors of the distance of the student's home from the university and the number of trips made to and from the university during the year. These variables should be borne in mind in considering the figures, which show that the amounts spent vary from an average of \$24.70 for three students at the University of Missouri School of Medicine to \$140.14 reported as an average for five students from Dartmouth Medical School.

It should be noted that, of the 1,161 students, only 443 have made reports on insurance and interest. This item is justifiably included on the ground that the interest on borrowed money to finance an education and the premiums on life insurance carried to protect the

one of \$13.50, were reported by one student in each of two schools and a high expenditure of \$174 was reported by one student in another school. These, however, are individual experiences and cannot be used as representative.

The average amount paid by students for recreation was found to vary from the low figure of \$20.86, reported by ten students from Woman's Medical College of Pennsylvania, to the high amount of \$153.53 shown by five reports from Dartmouth Medical School. Miscellaneous expenses varied from \$26.36, shown as the average of ninety-two students at Howard University School of Medicine to \$111.61, reported as an average of five students at Dartmouth Medical School.

Two reports from the University of Illinois College of Medicine show a low average of \$23 43, and two reports from Johns Hopkins University School of Medicine indicate a high average of \$130 37, but these are too close to individual experiences to be accepted as representative.

It will be noted that the average total cost to students reaches the high amount of \$1,716 75 shown by five reports from Dartmouth Medical School, with Harvard University Medical School a close second showing an average of \$1,621 75, based on thirty-two reports. The

The average of \$437 12 reported from Dartmouth Medical School was by two students only. The detailed figures for all these major items according to school and year are given in table 4.

An examination of the average annual expense for each major item according to class periods shows that tuition and fees seem to be lowest for seniors and highest for freshmen. It appears that sophomores pay least and freshmen most for medical books, journals and instruments. There is but a slight variation in the cost of board and room, however, sophomores seem to

by Colleges According to Class Periods

Third Year				Fourth Year				Unidentified			Total				
Number Registered	Reports Returned	Amount Reported	Average	Number Registered	Reports Returned	Amount Reported	Average	Reports Returned	Amount Reported	Average	Number Registered	Reports Returned	Amount Reported	Average	
7															
11	131	9	\$15 098 15	\$1 677 57	197	4	\$6 146 59	\$1 336 61	2	\$2 631 11	\$1 325 56	39	5	\$8 583 76	\$1 716 75
34	31	2	2 179 34	1 089 67	50						516	32	51 896 14	1 021 75	
40	54	12	14 705 97	1 225 50	55	5	6 233 83	1 246 77	4	6 824 41	1 706 10	156	22	26 467 01	1 203 01
											212	41	59 311 92	1 446 65	
6	102	3	4 404 59	1 468 20	104						475	11	15 810 61	1 437 33	
15	143	22	29 400 36	1 336 38	140	11	15 384 89	1 398 63	4	5 760 37	1 447 59	586	78	104 725 82	1 342 64
27	66				60	2	2 690 77	1 345 38	2	630 84	1 815 42	260	39	53 319 82	1 418 46
28	34	2	2 504 29	1 252 15	24	2	2 524 77	1 062 38				133	0	11 492 02	1 268 89
39	24	2	2 402 85	1 201 43	15						116	10	11 268 57	1 126 84	
4	141	22	27 290 39	1 240 47	203	4	6 729 02	1 662 25	1	1 668 63	1 668 63	744	27	35 688 04	1 321 78
13	125				120						549	2	1 606 77	803 39	
14	106				105						424	7	5 948 52	849 79	
18	170				161	3	3 219 19	1 073 06		147 81	1 028 76	659	140	175 302 09	1 170 01
24	17	9	12 829 09	1 425 45	137		4 275 25	1 425 08	3	4 633 27	1 544 42	522	39	54 800 89	1 405 15
25	79				61						311				
38	48	8	8 990 91	1 193 86	39	5	4 993 57	998 71	7	7 946 84	1 135 96	304	37	38 306 47	1 055 31
17	54				49						233				
19	113				100						528				
21											74	3	2 573 48	857 83	
22	67	8	7 911 28	999 91	65	2	2 060 17	1 030 09				316	26	27 295 56	912 89
36	78	1	1 113 33	1 113 33	77				1	1 391 25	1 391 25	308	8	9 421 05	1 177 63
8	48	7	8 050 68	1 150 17	46	1	1 249 89	1 249 89	10	10 971 14	1 097 11	196	37	38 727 60	1 046 09
10	29	2	1 807 07	903 98	30	2	1 005 66	502 83	3	2 044 00	681 33	140	28	27 725 51	811 43
12	34				68	4	4 208 28	1 052 07	1	1 255 50	1 255 50	241	94	84 503 05	907 16
16	72	1	1 738 52	1 738 52	70						287	2	2 138 89	1 069 44	
23											82	14	13 659 44	976 77	
29	41	1	861 10	861 10	71	1	544 82	544 82				179	3	2 989 17	76 06
35	49	22	27 129 38	1 283 15	53	23	37 951 91	1 472 63				24	107	137 379 07	1 274 20
37											110				
1											10	16	17 887 67	1 117 67	
20											60				
2	33	1	693 81	693 81	30						162	1	697 81	697 81	
3	73	0	9 700 98	1 067 59	87	14	15 532 11	1 109 44				371	68	7 016 67	1 114 43
31	71	5	7 344 18	1 065 84	4	34	74 242 40	1 607 17				308	46	4 407 72	91 47
32	105	7	8 958 64	1 284 09	100	15	15 031 34	1 001 74	5	6 596 1	1 319 66	452	47	61 315 46	1 047 7
5	71	8	8 463 70	1 077 96	47	4	4 568 42	1 14 10				20	33	24 571 22	1 017 77
33									1	715 09	715 09	61	17	14 408 12	847 51
9	87	22	25 285 22	1 160 37	78	2	2 464 52	1 232 41				30	77	80 777 7	1 018 71
26	60	9	9 136 48	1 015 16	41				1	714 10	714 10	27	15	14 661 8	777 44
30	43				49						17				
2 74	258		\$307 134 80	\$1 171 07	2 472	144	\$175 557 70	\$1 42 6	50	\$61 556 67	\$1 113	1094	1 161	\$1 70 390 11	\$1 16 01

low average total of \$693 81 cannot be used since this represents but one report and furthermore since the lowest total expense reported was \$424 99 from the University of Wisconsin Medical School.

Although the work of not only lectures and laboratory but also demonstration and clinic has become increasingly more exacting for the student it is evident that about half of them find time through either choice or necessity for some kind of grunt work. The earnings of 518 students shows an average of \$283 48 for 1929-1930. The low average was reported by eight students from Emory University School of Medicine, \$29 81. Seven students from the University of Oregon Medical School reported an average of \$427 12

spend least and seniors most for this item. The freshman gets by with the least expense for clothing and laundry while this item draws heaviest on seniors. The increase here seems to be a gradual fairly even step up during the four class periods. Possibly a gradual growth in social prestige may have an influence. The sophomores seem to travel slightly less or at least their average expense is slightly under all other classes. The highest average travel expense seems to fall on seniors. The amount paid for interest and insurance is lowest for freshmen and highest for seniors. Theoretically at least, this is as this item might be expected to stand. Juniors spend least and seniors most for recreation. The miscellaneous items are surprisingly closely divided

however the least is expended by juniors and the most by seniors in this subdivision.

The total annual expense then, seems to fall lightest on sophomores and heaviest on seniors. It is exceedingly interesting to note that earnings show a gradual but steady increase from the low average for the freshman year to the high average for the senior year (table 5).

are more nearly represented by the bracket \$600 to \$1,600 inclusive. The median for this smaller group ranging from \$600 to \$1,600 inclusive is \$1,107.27, and the average for this group is \$1,125 (table 6 and chart 1).

The geographic distribution indicates that student expenses are highest in the medical schools of the New England and Middle Atlantic states. The reported

TABLE 4—Cost of Medical Education, 1929-1930

Medical Schools Arranged According to Geographic Subdivisions of the United States				Tuition and Fees			Med. Books Instr. etc.			Board and Room			Clothing and Laundry			
		College Enrollment	Reports Returned	No.	Amount	Average	No.	Amount	Average	No.	Amount	Average	No.	Amount	Average	
NEW ENGLAND																
7	Dartmouth Medical School	29	5	1	\$2,101.25	\$420.25	1	\$81.92	\$113.18	5	\$2,844.11	\$468.82	5	\$48.31	\$114.87	
11	Harvard University Medical School	516	22	22	17,171.98	411.71	22	0.17	1.82	22	18,222.00	\$404.41	21	\$21.41	\$115.31	
34	Vermont College of Medicine Univ. of	136	1	1	\$2,241.20	\$2,241.20	1	1,080.91	77.92	22	\$4,412.50	\$200.57	22	\$68.41	\$110.41	
40	Yale University School of Medicine	212	41	41	17,731.14	430.00	41	4,080.92	121.00	41	19,426.50	\$473.82	41	\$84.19	\$110.00	
MIDDLE ATLANTIC																
6	Columbia Univ. Coll. of Phys. and Surge.	473	11	11	\$8,810.00	\$800.91	11	1,610.40	146.01	11	\$10,000.00	\$454.55	11	\$101.61	\$110.00	
15	Jefferson Medical College of Philadelphia	86	78	78	\$12,120.00	\$155.26	78	\$40.20	\$110.00	78	\$1,000.00	\$448.72	77	\$24.41	\$110.00	
27	Pittsburgh School of Medicine Univ. of	260	1	1	\$10,411.83	\$10,411.83	1	\$41.11	\$12.47	1	\$17,811.70	\$48.78	29	\$38.41	\$110.00	
28	Rochester School of Medicine Univ. of	113	1	1	\$2,741.10	\$2,741.10	1	\$1,114.81	\$12.57	9	\$4,081.11	\$45.79	9	\$129.00	\$110.00	
39	Woman's Medical College of Pennsylvania	116	10	10	\$1,111.71	\$111.17	10	\$1,107.71	\$110.74	10	\$4.58	\$77.49	10	\$10.49	\$110.33	
EAST NORTH CENTRAL																
4	Chicago Rush Medical College Univ. of	344	21	27	\$8,818.00	\$326.59	27	\$2,747.79	\$101.77	27	\$12,089.40	\$481.09	21	\$414.00	\$130.00	
13	Illinois College of Medicine University of	74	1	1	\$3,312.20	\$3,312.20	1	\$6.20	\$11.12	1	\$41.40	\$271.71	1	\$1.70	\$11.13	
14	Indiana University School of Medicine	474	7	7	\$1,371.00	\$223.00	7	\$1,211.71	\$173.00	7	\$2,290.41	\$254.00	7	\$20.41	\$130.00	
16	Michigan Medical School University of	699	150	150	\$1,111.00	\$240.00	150	\$1,001.41	\$100.00	150	\$6,081.20	\$444.00	150	\$20,000.00	\$130.00	
24	Northwestern University Medical School	22	1	1	\$14,011.81	\$14,011.81	1	\$1,001.41	\$100.00	1	\$1,140.41	\$97.61	39	\$9.41	\$120.00	
25	Ohio State Univ. College of Medicine	111	1	1	\$1,111.00	\$1,111.00	1	\$1,111.00	\$1,111.00	1	\$1,111.00	\$1,111.00	1	\$1,111.00	\$1,111.00	
38	Wisconsin Medical School University of	104	37	37	\$4,681.10	\$126.51	37	\$4.71	\$6.33	37	\$1,111.00	\$49.88	7	\$618.81	\$161.21	
WEST NORTH CENTRAL																
17	Kansas School of Medicine University of	213	1	1	\$1,111.00	\$1,111.00	1	\$1,111.00	\$1,111.00	1	\$1,111.00	\$1,111.00	1	\$1,111.00	\$1,111.00	
19	Minnesota Medical School University of	78	1	1	\$1,111.00	\$1,111.00	1	\$1,111.00	\$1,111.00	1	\$1,111.00	\$1,111.00	1	\$1,111.00	\$1,111.00	
21	Missouri School of Medicine University of	74	3	3	\$44.00	\$14.67	3	\$19.00	\$6.33	3	\$1,202.20	\$400.71	3	\$18.04	\$116.21	
22	Nebraska College of Medicine Univ. of	16	21	21	\$1,111.00	\$243.33	21	\$1,001.41	\$100.00	21	\$1,111.00	\$1,111.00	21	\$2,281.00	\$110.00	
36	Washington Univ. School of Medicine	88	8	8	\$3,011.00	\$376.38	8	\$1,091.00	\$136.38	8	\$2,181.40	\$272.67	8	\$41.81	\$111.25	
SOUTH ATLANTIC																
8	Emory University School of Medicine	118	1	1	\$10,011.00	\$10,011.00	1	\$1,001.00	\$1,001.00	1	\$11,701.41	\$316.90	1	\$140.91	\$138.91	
10	Georgia Medical College University of	140	1	1	\$3,172.00	\$3,172.00	1	\$40.77	\$8.17	1	\$8,084.10	\$287.20	1	\$10.84	\$110.71	
12	Howard University School of Medicine	241	14	14	\$2,616.01	\$201.14	14	\$2.58	\$8.04	14	\$2,817.41	\$244.11	14	\$1,073.73	\$129.71	
13	Johns Hopkins Univ. School of Medicine	281	2	2	\$1,747.90	\$873.95	2	\$8.68	\$11.41	2	\$1,111.00	\$287.88	2	\$244.11	\$131.21	
26	North Carolina School of Med. Univ. of	82	14	14	\$1,071.00	\$236.76	14	\$1.00	\$6.37	14	\$4.21	\$28.01	14	\$191.24	\$136.00	
29	South Carolina Med. College of State of	111	1	1	\$94.00	\$94.00	1	\$1.00	\$1.00	1	\$1,111.00	\$280.00	1	\$29.71	\$139.99	
35	Virginia Dept. of Medicine University of	24	107	107	\$2,121.30	\$207.82	106	\$1,418.99	\$17.71	107	\$4,018.84	\$400.00	101	\$1,868.88	\$148.01	
37	West Virginia Univ. School of Medicine	110	1	1	\$1,111.00	\$1,111.00	1	\$1,111.00	\$1,111.00	1	\$1,111.00	\$1,111.00	1	\$1,111.00	\$1,111.00	
EAST SOUTH CENTRAL																
1	Alabama School of Medicine Univ. of	10	16	16	\$3,731.00	\$233.19	16	\$1,011.00	\$188.88	16	\$1,148.60	\$217.71	16	\$216.41	\$110.10	
20	Mississippi Medical School University of	66	1	1	\$1,111.00	\$1,111.00	1	\$1,111.00	\$1,111.00	1	\$1,111.00	\$1,111.00	1	\$1,111.00	\$1,111.00	
WEST SOUTH CENTRAL																
2	Arkansas School of Medicine Univ. of	162	1	1	\$212.00	\$212.00	1	\$14.41	\$14.41	1	\$2.00	\$2.00	1	\$10.46	\$10.46	
3	Baylor University College of Medicine	11	68	68	\$2,121.12	\$311.00	67	\$40.11	\$11.00	68	\$2,811.00	\$291.14	68	\$10,000.00	\$11.41	
31	Texas School of Medicine University of	88	6	6	\$2,011.00	\$335.00	6	\$11.41	\$11.41	6	\$19,000.00	\$307.00	6	\$1,211.00	\$11.41	
32	Louisiana Univ. School of Medicine	412	47	47	\$14,791.10	\$314.45	47	\$4,301.19	\$91.88	47	\$18,400.00	\$391.41	47	\$829.42	\$168.01	
MOUNTAIN																
3	Colorado School of Medicine Univ. of	201	33	33	\$7,816.88	\$236.87	33	\$2.00	\$9.41	1	\$12,231.00	\$171.00	33	\$3,874.00	\$110.40	
55	Utah School of Medicine University of	61	17	17	\$1,111.00	\$111.11	17	\$1,668.31	\$98.14	17	\$1,111.00	\$111.11	17	\$1,111.00	\$111.11	
PACIFIC																
9	Evangelical College of Medical	510	77	77	\$2,021.72	\$261.44	77	\$741.84	\$97.11	77	\$21,800.00	\$283.99	77	\$601.42	\$104.00	
26	Oregon Medical School University of	221	13	13	\$3,067.20	\$235.94	13	\$1,280.00	\$198.46	13	\$140.99	\$343.13	13	\$1,182.94	\$119.33	
30	Stanford University School of Medicine	193	1	1	\$1,111.00	\$1,111.00	1	\$1,111.00	\$1,111.00	1	\$1,111.00	\$1,111.00	1	\$1,111.00	\$1,111.00	
Total				10,947	1,161	\$346,669.64	\$298.60	1,161	\$122.48	\$10.68	1,161	\$4,019.92	\$388.54	1,161	\$1,013.41	\$113.30

TABLE 5—Cost of Medical Education 1929-1930, by

Period	Tuition and Fees			Medical Books Instr. etc.			Board and Room			Clothing and Laundry			Travel		
	No. of Re-ports	Amount Reported	Average	No. of Re-ports	Amount Reported	Average	No. of Re-ports	Amount Reported	Average	No. of Re-ports	Amount Reported	Average	No. of Re-ports	Amount Reported	Average
1st year	48	\$108,961.00	\$2,270.85	347	\$4,318.36	\$12.45	348	\$133,370.74	\$383.25	348	\$41,801.50	\$120.12	338	\$21,741.19	\$64.31
Second year	361	108,099.88	299.39	361	31,903.63	\$88.38	361	136,664.21	\$378.17	361	48,127.79	\$133.32	344	21,841.68	\$63.79
Third year	258	78,969.60	306.05	258	25,703.66	\$99.63	258	101,191.23	\$392.24	257	31,215.74	\$121.81	251	19,101.46	\$76.14
Fourth year	144	36,097.62	\$250.68	144	13,083.73	\$91.14	144	58,908.74	\$409.09	144	24,422.67	\$169.60	131	13,481.01	\$102.91
Unidentified	50	14,561.04	\$291.22	50	5,943.40	\$118.89	50	20,921.81	\$418.44	49	7,003.39	\$143.14	47	\$3,241.30	\$69.81
Total	1,161	\$346,669.64	\$298.60	1,159	\$122.48	\$10.68	1,161	\$4,019.92	\$388.54	1,159	\$1,013.41	\$113.30	1,119	\$1,013.41	\$113.30

The reports studied showed a wide range of expense intervals, from \$424.99 for one freshman to \$2,839.80 for one sophomore. Table 6 shows the distribution of the actual individual expenses by expense intervals or magnitude groups according to class periods and the geographic location of the school. The median for all reports is \$1,120.86, the average \$1,163.05. The table shows that the very low and exceedingly high amounts are relatively unusual. The total of these several items, therefore, distort the true median and average, which

expenditures for the medical schools of the Pacific and Mountain states appear to be lowest. The expense for the schools of the South Atlantic states closely approaches the western averages. The percentage of the average total expense that is paid for each major expense item is shown in table 7 and chart 2. Board and room call for 33.4 per cent of the total, a general average expense of \$388.54 annually. Tuition and fees represent 25.7 per cent of the total expense, averaging \$298.60. These two items, it will be seen, call for 59

per cent of the student's annual expense. No attempt has been made to ascertain whether expenditures were in any instance exorbitant or unnecessary. However, when it is found that 50 per cent of the students reporting are meeting their necessary expenses with approximately \$1,100 or less it becomes difficult to interpret the expenditures in the upper brackets as high as \$2,839, in terms of actual necessary college demands.

The results of one study, however, provide a few valuable figures that closely parallel the present investigation. These comparisons are given in table 8. The former study was made in 1920 by Dr. Irving S. Cutter and embodied data from eight medical schools. Figures from Dr. Cutter's study are given only in those instances in which his analysis and the present study approach the same classifications.

by Colleges According to Major Expense Items

Travel			Insurance and Interest			Recreation			Miscellaneous			Total			Earnings					
No	Amount	Average	No	Amount	Average	No	Amount	Average	No	Amount	Average	No	Amount	Average	No	Amount	Average			
7	5	\$1,007.11	\$140.14	3	\$996.96	\$98.09	5	\$767.66	\$153.53	5	\$808.04	\$111.61	5	\$837.76	\$171.75	2	\$574.28	\$437.14	7	
11	32	3,684.98	115.16	14	1,107.51	79.11	31	2,838.08	92.20	31	2,549.56	82.24	32	51,896.14	1,621.75	18	7,743.90	413.55	11	
34	92	1,891.13	63.23	11	877.72	79.79	22	2,218.01	100.82	22	1,853.39	84.73	22	26,407.01	1,203.05	12	1,832.57	154.38	34	
40	40	3,342.62	88.57	11	761.51	69.25	40	4,732.15	118.30	41	2,345.99	57.20	41	59,311.92	1,446.63	28	6,348.16	227.79	40	
6	10	4,411.11	47.41	1	13.50	13.50	11	546.41	49.68	11	946.19	86.02	11	1,810.61	143.82	5	1,401.50	280.90	6	
15	74	5,818.54	72.73	27	2,133.79	79.03	76	7,317.63	96.78	77	5,680.75	73.78	78	104,725.82	1,342.74	26	6,572.05	252.77	15	
27	31	2,484.21	67.14	14	1,170.60	83.61	38	3,808.50	100.22	38	2,119.35	55.77	39	5,319.82	1,418.46	21	5,101.57	242.93	27	
38	9	897.07	99.67	3	144.26	48.09	10	514.78	51.20	9	1,012.12	78.12	9	11,492.02	1,265.89	4	787.25	196.81	38	
39	10	996.50	90.65	1	174.00	174.00	1	208.55	208.55	10	375.85	37.58	10	11,268.37	1,126.84	1	72.40	72.40	39	
4	26	2,250.72	86.57	16	1,746.88	111.06	26	1,457.43	55.90	26	1,503.97	57.85	27	3,688.04	1,221.78	15	6,201.02	413.40	4	
13	7	69.18	34.08	1	9.44	9.44	2	109.00	54.50	2	46.85	23.43	2	1,606.77	803.39	7	76.90	250.90	13	
14	7	470.74	60.08	9	95.27	31.74	7	231.47	33.07	7	284.78	40.68	7	5,948.52	849.79	3	10,832.96	211.23	14	
18	144	9,836.45	68.31	64	4,804.04	75.07	148	11,693.42	9.01	147	10,778.99	69.55	150	175,502.09	1,170.01	62	10,935.96	211.23	18	
24	39	3,630.81	92.36	20	1,716.37	85.82	38	3,185.86	83.84	39	2,864.23	71.90	39	4,900.89	1,405.15	22	8,812.40	400.36	24	
25	38	1,961.56	54.49	18	2,040.72	113.77	37	2,696.49	72.88	37	2,440.84	65.97	37	38,306.47	1,035.31	20	4,300.64	215.03	25	
17	19	74.10	24.70	3	89.50	29.83	2	81.35	40.68	3	69.94	89.98	3	2,573.48	857.52	3	1,161.50	387.17	17	
21	25	1,346.52	53.86	1	1,131.21	84.48	25	1,691.11	67.90	26	1,704.48	65.16	26	25,295.25	972.89	19	5,417.37	285.12	21	
22	8	545.01	68.13	6	208.03	34.67	8	454.23	56.78	8	511.83	43.98	8	9,421.05	1,177.63	13	560.03	156.98	22	
8	37	2,458.47	66.15	10	567.18	86.72	36	2,376.85	66.02	37	3,006.77	81.26	37	38,727.60	1,046.69	8	2,850.00	29.81	8	
10	27	2,023.40	74.94	13	561.28	43.18	27	1,668.74	58.10	26	1,757.75	67.60	28	22,725.51	811.65	7	301.85	102.62	10	
12	86	3,784.80	44.01	22	1,445.22	65.71	89	5,282.32	59.35	92	2,425.29	26.36	94	84,803.05	902.16	38	10,657.24	250.45	12	
16	2	214.85	107.47	2	168.77	84.39	2	88.08	44.04	2	2,660.74	130.37	2	3,138.89	1,569.45	2	512.00	256.00	16	
23	14	579.11	41.34	4	158.56	39.64	14	794.35	56.74	14	1,382.46	98.75	14	13,659.44	975.67	2	83.90	41.95	23	
29	125	125.25	43.08	36	3,471.77	96.44	104	9,782.75	94.06	105	6,542.95	61.15	107	136,339.05	1,254.90	35	8,511.15	243.75	29	
37	105	6,544.54	62.33	36	3,471.77	96.44	104	9,782.75	94.06	105	6,542.95	61.15	107	136,339.05	1,254.90	35	8,511.15	243.75	37	
1	16	1,636.82	105.90	8	328.62	41.08	12	778.90	64.86	16	1,040.70	66.92	16	17,882.67	1,117.67	5	1,407.00	281.40	1	
20	3	6	4,219.41	64.91	30	2,707.10	73.57	60	1,196.21	78.53	1	1.00	13.00	1	693.91	693.91	20	7,096.54	244.75	20
31	4	437.75	81.05	23	1,243.94	54.08	56	4,210.07	75.79	65	4,741.38	84.67	68	7,801.66	1,114.73	21	8,011.45	414.76	31	
32	44	5,048.89	114.75	17	1,947.52	114.58	44	5,059.52	114.53	46	3,050.01	66.30	47	61,194.46	1,304.67	15	3,421.50	228.10	32	
5	51	2,021.64	69.21	15	1,065.99	71.06	33	2,246.00	68.06	35	2,010.63	60.95	37	34,469.92	1,047.55	20	4,697.72	249.69	5	
33	16	526.22	32.89	7	655.46	90.43	17	910.15	58.77	16	717.98	44.87	17	14,408.12	847.44	12	2,145.11	178.76	33	
9	75	4,967.73	66.24	18	966.10	53.68	68	2,065.65	30.38	77	2,749.83	35.71	77	80,722.53	1,045.74	67	9,677.24	299.77	9	
26	15	1,328.40	88.56	9	689.16	76.57	14	628.09	44.86	15	728.75	48.58	15	14,661.58	977.44	7	2,951.84	47.12	26	
30	1119	\$9,456.49	\$71.65	443	\$34,312.54	\$77.45	1119	\$85,746.30	\$76.65	1148	\$71,429.50	\$62.22	1161	\$1,000,000.11	\$1,163.05	458	\$146,544.85	\$325.45	30	

Class Periods According to Major Expense Items

Insurance and Interest			Recreation			Miscellaneous			Total			Earnings		
No of Re ports	Amount Reported	Average	No of Re ports	Amount Reported	Average	No of Re ports	Amount Reported	Average	No of Re ports	Amount Reported	Average	No of Re ports	Amount Reported	Average
109	\$7,499.94	\$68.22	338	\$24,122.29	\$72.45	340	\$22,125.09	\$65.09	348	\$404,881.56	\$1,166.45	17	\$5,000.00	\$294.12
177	9,789.83	71.45	348	2,258.46	72.66	360	10,702.70	57.11	361	40,511.55	1,114.55	171	4,700.00	274.03
111	7,655.95	68.97	51	17,095.30	70.51	258	14,859.96	57.59	258	20,144.00	1,171.01	175	3,160.00	177.14
9	750.84	104.33	140	11,094.63	100.67	145	10,881.76	74.99	144	17,577.70	1,213.72	74	2,600.00	351.35
17	2,021.68	118.92	47	4,540.02	96.60	47	3,181.93	67.60	50	61,000.00	1,220.00	15	4,700.00	313.33
44	\$34,912.45	\$77.45	1119	\$85,746.30	\$76.65	1148	\$71,429.50	\$62.22	1161	\$1,000,000.11	\$1,163.05	458	\$146,544.85	\$325.45

There may be merit to the argument that college training, to be of greatest value, should embody something more than the gathering of facts from classroom and laboratory. If this is true and if there is a social or extramural training that requires some financial outlay, it may be that some of the students whose expenses fall in the lower brackets are denying themselves a legitimate part of the potential college benefits.

There have been few studies on this subject and therefore one cannot make the comparisons one wishes.

It appears from this table that tuition and fees are the items that have increased most, more than 50 per cent. Books and instruments now cost about 50 per cent more than in 1920. On the other hand, board and room and clothing show a surprisingly slight rise and the expense for recreation has taken a decided decline.

All items for both studies cannot be shown and the schools studied in the two reports differ, but the average total expense for all the schools studied shows

an increase now of \$273.39 over 1920-1921. No attempt has been made to reconcile these figures with the change in value of the dollar over the past ten years.

schools averages slightly more than \$1,100. Tuition and fees and board and room call for 59 per cent of the average total expense. Costs seem to be highest in the schools of the New England and Middle Atlantic states.

TABLE 6—Cost of Medical Education 1929-1930 by Expense Intervals According to Class Periods and Geographic Distribution

	Class Periods						Geographic Distribution									
	First Year	Second Year	Third Year	Fourth Year	Unidentified	Total	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific	Total
Less than \$500	1	1				2			1				1			4
\$500 to \$599	4	2	1	1	1	9					7			1	1	9
\$600 to \$699	10	10	5	1		26					14		2	3	1	20
\$700 to \$799	1	20	21		4	46			14	3	18	1	11		11	55
\$800 to \$899	29	56	23	1	4	113		2	2	10	41		24	8	1	127
\$900 to \$999	42	56	26	17	2	143	8	7	28	6	70	1	33	1	10	144
\$1,000 to \$1,099	41	12	24	1	9	87		12	2	6	39	6	18	9	2	101
\$1,100 to \$1,199	39	43	49	13	6	149	12	22	41	7	26	2	20	3	11	149
\$1,200 to \$1,299	4	57	29	17	7	114	14	21	1	2	30	2	20	6	9	135
\$1,300 to \$1,399	28	34	16	18	6	102	10	24	22		18	1	18	2	9	107
\$1,400 to \$1,499	27	18	14	12	2	73	1	19	1	1	18		9			77
\$1,500 to \$1,599	19	13	18	7	3	60	10	24	16		10					60
\$1,600 to \$1,699	16	7	6		1	41	11	6	12		3		1	1	2	41
\$1,700 to \$1,799		5	4	4		13		3			1	1	3			18
\$1,800 to \$1,899	2	2	3	2	1	10		3							1	10
\$1,900 to \$1,999	3	2		1	2	11	3	4	1		2					11
\$2,000 to \$2,099	3		2	3	1	9		1	1				1		1	9
\$2,100 to \$2,199	2	1	2		1	6		1	2		3					6
\$2,200 to \$2,299		1			1	2		1	1							2
\$2,300 to \$2,399																
\$2,400 to \$2,499	1					1	1									1
\$2,500 to \$2,599																
\$2,600 to \$2,699																
\$2,700 to \$2,799				2		2			1				1			3
\$2,800 to \$2,899		1				1	1									1
Total	348	361	238	144	60	1,161	100	147	312	7	100	16	172	50	92	1,161

TABLE 7—Percentage of Item Expenditures to Total Cost by Magnitude Groups According to Major Items of Medical Education Cost

Group Magnitude	Tuition and Fees	Medical Books and Instruments etc.	Board and Room	Clothing and Laundry	Travel	In Unseen and Interest	Recreation	Miscellaneous	Total Reports	Per Cent
Less than \$500	29.70%	6.01%	44.48%	4.76%	9.11%	1.09%	2.18%	4.28%	2	100%
\$500 to \$599	29.01%	9.11%	64.42%	10.76%	9.24%	1.09%	2.48%	3.01%	9	100%
\$600 to \$699	30.44%	9.17%	37.11%	9.91%	4.17%	0.85%	4.00%	3.83%	26	100%
\$700 to \$799	28.01%	8.42%	36.05%	10.29%	9.91%	0.85%	4.00%	3.83%	83	100%
\$800 to \$899	27.68%	8.13%	26.61%	11.26%	4.02%	1.41%	4.77%	3.06%	17	100%
\$900 to \$999	27.23%	8.06%	26.03%	11.76%	4.02%	1.41%	4.77%	3.06%	14	100%
\$1,000 to \$1,099	26.16%	7.40%	24.44%	11.76%	4.02%	1.41%	4.77%	3.06%	141	100%
\$1,100 to \$1,199	27.80%	8.90%	33.03%	11.67%	5.99%	1.37%	4.77%	3.06%	149	100%
\$1,200 to \$1,299	26.83%	9.70%	26.11%	11.09%	6.17%	2.61%	6.09%	5.26%	133	100%
\$1,300 to \$1,399	26.41%	9.02%	27.72%	11.75%	5.94%	2.06%	7.12%	6.33%	102	100%
\$1,400 to \$1,499	24.67%	9.21%	22.43%	12.39%	6.22%	2.12%	7.01%	5.77%	73	100%
\$1,500 to \$1,599	24.39%	8.75%	12.71%	12.21%	6.26%	2.12%	7.01%	5.77%	60	100%
\$1,600 to \$1,699	21.00%	8.79%	31.06%	12.88%	5.09%	4.76%	7.37%	4.99%	41	100%
\$1,700 to \$1,799	23.07%	9.11%	30.07%	10.07%	7.12%	5.09%	8.27%	7.35%	18	100%
\$1,800 to \$1,899	20.94%	9.09%	32.15%	12.91%	9.44%	4.24%	9.33%	4.66%	10	100%
\$1,900 to \$1,999	20.22%	8.79%	29.41%	12.46%	8.01%	6.63%	11.01%	3.00%	11	100%
\$2,000 to \$2,099	17.10%	10.76%	25.74%	16.33%	11.11%	4.04%	11.13%	4.03%	9	100%
\$2,100 to \$2,199	18.82%	8.72%	30.84%	20.30%	7.77%	2.71%	11.77%	5.14%	6	100%
\$2,200 to \$2,299	18.11%	10.06%	20.60%	8.33%	15.98%	9.40%	8.04%	9.40%	2	100%
\$2,300 to \$2,399	16.20%	19.21%	21.78%	12.71%	11.00%	3.00%	3.00%	11.20%	1	100%
\$2,400 to \$2,499	13.04%	11.20%	24.20%	14.99%	10.09%	1.00%	9.91%	3.99%	2	100%
\$2,500 to \$2,599	20.22%	8.30%	27.60%	15.36%	24.14%		6.84%	1.01%	1	100%
Number of reports	1,161	1,169	1,161	1,169	1,119	443	1,119	1,148	1,161	
Amount reported	\$46,669.64	\$122,483.03	\$41,092.77	\$19,131.44	\$9,436.49	\$3,312.64	\$8,746.30	\$71,421.90	\$1,300,300.11	
Per cent of total	2.67%	9.07%	3.41%	11.79%	1.88%	2.34%	6.32%	5.29%	100%	

TABLE 8—Comparison of Costs of Medical Education According to Certain Major Expense Items, 1920-1921 and 1929-1930

Medical School	Tuition and Fees		Books Journals and Instruments etc.		Board and Room		Clothing and Laundry		Recreation		Total		Earnings	
	1920-21	1929-30	1920-21	1929-30	1920-21	1929-30	1920-21	1929-30	1920-21	1929-30	1920-21	1929-30	1920-21	1929-30
Indiana University School of Medicine	\$162.36	\$225.04	\$62.47	\$73.60	\$60.12	\$325.06	\$107.73	\$71.63	\$90.36	\$1.07	\$787.01	\$849.79	\$319.33	\$233.30
University of Michigan Medical School	167.83	242.70	79.87	100.06	432.74	444.60	126.63	179.31	128.01	70.01	1,021.77	1,110.01	297.87	211.23
University of Nebraska College of Medicine	134.40	226.18	68.16	80.39	286.18	333.07	122.46	180.88	125.43	67.00	871.04	972.89	330.11	254.12
University of Virginia Department of Medicine	190.41	305.82	60.57	173.76	31.27	40.03	124.48	148.01	114.24	94.06	682.28	1,242.20	213.37	244.10
General average for all schools studied	\$187.16	\$279.60	\$68.97	\$105.68	\$30.10	\$388.34	\$121.40	\$137.30	\$110.20	\$76.63	\$889.68	\$1,167.00	\$265.84	\$214.15

SUMMARY

The cost of medical education to the student for 1929-1930 shown by the reports of 1,161 students attending widely separated and various types of medical

and most reasonable in the schools of the Pacific and Mountain states, with the South Atlantic states following closely.

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SATURDAY, FEBRUARY 28, 1931

THE COSTS OF MEDICAL EDUCATION

Elsewhere in this issue appears a report by Dr R G Leland of an investigation into the costs of medical education. This investigation was stimulated by the Committee on the Costs of Medical Care and is one of several investigations undertaken by the American Medical Association at its own expense in order to supply facts relative to medical economics not heretofore available.

Many estimates have been ventured by various observers as to the amount of money spent by the average young man—or in many instances no doubt by his parents—in order to provide him with a medical education. The impression has been that the cost is approximately \$1,000 a year for tuition and maintenance. The investigation made by Dr Leland reveals the actual sum spent by the student in any year as \$1,100, this including tuition and fees, books and periodicals, board and room, clothing and laundry, and recreation. In 1920, by contrast, the amount was almost \$900. The figures submitted do not include the cost of premedical education or such expenses as may be incurred during the term of internship that is required by all colleges and most state licensing boards. Neither do the figures take into account the interest on the investment or the amount of money the young man might have earned were he in a gainful occupation rather than in a professional school. At the lowest possible estimate apparently, a medical education must cost at least \$5,000 and if all the factors are taken into account may cost in actual cash expended as much as \$10,000. If possible earnings and interest are added the cost may actually reach \$20,000. It is doubtful whether there is any other occupation in which men engage in which the cost of training is so great. Certainly there is no other vocation in which the time spent to reach efficiency is so extended. The gradual lengthening of the medical curriculum through the demands for premedical education, for internship and for special training, has prolonged the infancy of the

young man in medicine to almost thirty years. The human infant at best has the longest period of infancy of any living species. Whereas many animals are competent to take care of themselves and, indeed, to produce families one week after birth, the human infant is not competent to take care of himself until from eighteen to twenty years after birth. If he embarks on a professional vocation, the period is extended to thirty years. From the point of view of the biologist, it is doubtful whether this is a sound trend in human life. The persons most likely to produce progeny capable of raising the intellectual if not the physical standard of the race postpone their maturity beyond the age when biologists are convinced that optimal conditions exist for reproduction.

Beyond these biologic and sociological considerations are the economic factors. If the sum represented by the cost of a medical education were properly invested for a young man at the age of 20 years, he would have at 50 years an income capable of maintaining him in comfort for the rest of his life. Possibly the studies now being made on the incomes of physicians will indicate that the income of the physician at 50 years is seldom sufficient to maintain him in reasonable comfort for the remainder of his existence. Indeed, it is a question whether the average income of the physician represents a reasonable return on the cost of the education.

With these considerations in mind, it is interesting to turn to one of the latest promulgations on the subject of higher education. Mr Abraham Flexner, who has given much thought to medical education and who is no doubt to be credited considerably for the prevailing high standards, has recently summarized his views in a volume entitled "Universities American, English, German." The time is perhaps not yet propitious for such a summary in view of the fact that many of the changes in medical education for which Mr Flexner is largely responsible seem to be at this moment in a state of such agitation that even the most optimistic observer might be doubtful as to what the precipitate will be. Mr Flexner is, of course, more interested in maintaining high standards of teaching and research than in the education of physicians to take care of the majority of the people. Indeed, he conveys the impression that there is not a medical school in the country that really comes up to the standards he thinks necessary for a medical school. Mr Flexner is convinced that there can be no medical school worthy of the name without sufficient endowment to make its faculties entirely independent from other sources. One is inclined to the opinion that a further advance in the cost of medical education might well bring about the point of view that a sufficient endowment is necessary to make the students absolutely independent of any income from personal earnings or their parents if they are to complete the curriculum in a school of the

Flexner standard. The absurdity of the entire discussion becomes apparent when Mr. Flexner, in one of his sapient sentences, figuratively bites the hand that feeds him. "On the other hand, in England, as in America and the rest of the world, wealth may still triumph over reason; neither we nor they nor others have found effective means of putting the idle and stupid rich in their proper place."

The recent conference on medical education held under the auspices of the Council on Medical Education and Hospitals of the American Medical Association indicated that the problems of medical education are by no means settled. The curriculum still remains the subject of more or less confused discussion. The time spent by young men in professional schools is obviously too long, and it seems quite reasonable to propose that men sufficiently advanced in years to engage in professional study do not require a three or four months vacation but might well shorten their time by occupying at least eleven months of the year in study. It is questionable whether the cost of medical education can be greatly reduced, and certainly the demands on the student as shown by the figures presented by Dr. Leland are such that his actual earnings by outside work can hardly be counted on to be of much value. The presentation of facts in Dr. Leland's article is again proof of the necessity of more actual evidence in this field on which to base discussions rather than of any attempt to settle these problems by armchair philosophers and unpractical idealists.

STATISTICAL STUDIES OF DEAF CHILDREN

Shambaugh and his associates¹ have recently completed a comprehensive study of 5,348 children in institutions for the deaf. Similar studies have not been attempted before, although Newhart² and others have studied children in public schools for evidences of deafness. Shambaugh's study consists of an analysis of the history and a complete aural examination of each patient. Sixty-two per cent of the children were found to be congenitally deaf. More than half of the cases of acquired deafness occurred before the age of 3. Shambaugh declares that probably a large proportion of the group of acquired deafness are really congenital, since parents desire to escape the stigma of having given birth to deaf children and because deafness is often not definitely established until the age of 3. The statistics show that severe deafness in children is acquired in almost all cases before the age of 10.

Meningitis was responsible for almost one fifth of the cases of acquired deafness, while measles caused 83 per cent and scarlet fever and influenza each caused 7 per cent. There was an accompanying suppurative otitis media in many cases. The study revealed that hearing or vestibular responses were present in most cases in which there had been suppurative otitis media. The authors believe that suppurative otitis media, if it invades the inner ear, will destroy all vestiges of hearing and vestibular responses. They conclude that the deafness may result from a toxic neuritis developing independently of the otitis rather than from an extension of the suppurative process into the inner ear. They declare that tonsils and adenoids "can be responsible for a severe deafness only through an otitis media that has invaded the labyrinth—a negligible factor in this series."

Hereditary syphilis apparently causes but few cases of acquired deafness. Wassermann reactions were positive in only two of the 396 cases tested. A family history of deafness or of consanguinity was found in more than a third of the cases of congenital deafness. The common assumption that in congenital deafness the vestibule is not involved was disproved when it was shown that two thirds of this group gave diminished or absent vestibular responses. Vestibular responses were absent in both the congenital and the acquired groups in the same proportion whether partially or totally deaf. Three fifths of the entire group had a speech defect so pronounced that the untrained listener had difficulty in understanding the child.

While such a study may have many errors because data must be collected from whatever histories are available, the large number of cases should nullify gross errors. The great majority of cases of deafness requiring institutional care are apparently congenital. That heredity is an active factor in the production of congenital deafness is indicated by the large number of cases of deafness in the immediate family. Shambaugh declares that persons from families with congenital deafness should not bear offspring. Probably congenital deafness will continue to be prevalent as long as eugenic marriage is not practiced. In this study there were 232 patients whose parents were relations by blood, yet only 17 per cent gave a history of deafness in the family. It would seem from this result that intermarriage, even between distant relatives, tends to summate and bring out remote hereditary defects in hearing. Shambaugh's belief that a suppurative process of the inner ear must necessarily destroy completely hearing and vestibular responses requires confirmation. Careful studies of the inner ear in cases of severe deafness with a history of suppurative otitis media would do much to settle the point. The faithful use of measures now available for the treatment of the infectious diseases, especially meningitis and scarlet fever, might help much to lessen the incidence of acquired deafness.

¹ Shambaugh G. E., Hall Alice K., Hagens E. W. and Holderman J. W. Statistical Studies of the Children in the Chicago Public Schools for the Deaf. *Arch. Otolaryng.* 2: 417 (Nov.) 1925. Supplementary Statistical Studies of the Children in the Chicago Public Schools for the Deaf. *ibid.* 5: 209 (March) 1927. Shambaugh G. E., Hagens E. W., Holderman J. W. and Watkins R. W. Statistical Studies of the Children in the Public Schools for the Deaf. *ibid.* 7: 424 (May) 1928. Shambaugh G. E., Hayden D. B., Hagens E. W. and Watkins R. W. Statistical Studies of the Children in Public Schools for the Deaf. *ibid.* 12: 190 (Aug.) 1930.

² Newhart Horace. Progress in the Prevention of Deafness. *J. A. M. A.* 93: 1117 (Oct. 12) 1929.

LIMITATIONS OF BACTERIOPHAGE
THERAPY

The "d Herelle phenomenon" has been the subject of 2,000 published papers since it was first described in 1915 by Twort.¹ As yet but little agreement has been reached as to the mechanism of action of the bacteriophage and there is no reliable guide to the practical limitations of therapy by its use. The chief factor contributing to this uncertainty has been the lack of a dependable quantitative method. Last year, Dr A. P. Krueger² of the Rockefeller Institute, Princeton, N. J., devised a quantitative technic by means of which for the first time bacteriophage could be estimated with an accuracy of ± 3 per cent. Using this new technic, Drs Krueger and Northrop³ studied the kinetics of the bacterium-bacteriophage mixture. Their revolutionary results seem to prove that future theories must be developed along radically different lines from those suggested by any previous investigator and that future therapy must be limited to certain definite anatomic types of infection.

Drs Krueger and Northrop were unable to find the least evidence that the transmissible lysis of Twort is a living biologic entity. During the stages preceding explosive bacterial lysis there is no evidence that ordinary amounts of bacteriophage exert any physiologic or pathologic effects on the bacterium. It neither stimulates nor retards bacterial growth. Proliferation of the Twort lysis is intimately linked with bacterial multiplication. The bacteriophage is formed within the bacterial cell and diffuses outward at such a rate that extracellular concentration and intracellular concentration of bacteriophage maintain to each other a constant mathematical ratio. This is a type of distribution common to simple chemical substances but one hardly to be expected if the bacteriophage is a complex vital unit. When a certain critical ratio between bacterium and extracellular bacteriophage is attained, bacterial multiplication ceases and bacterial dissolution begins.

Krueger and Northrop have developed mathematical equations that accurately predict all the major events of this relationship including the rate of bacterial growth, the rate of bacteriophage formation, time of lysis, and concentration necessary for bacteriostasis. In their practical bearing the Krueger-Northrop equations mean that a certain critical concentration of extracellular bacteriophage is essential for bacteriolysis in about the same way that a critical environmental carbon dioxide concentration is necessary for death from carbon dioxide autoinflammation. This means that no therapeutic effects whatever are predictable for bacteriophage except under conditions in which local

extrabacterial bacteriophage concentration can be raised to and maintained at this critical level. This can be done either by direct introduction of massive doses of bacteriophage or by allowing free bacterial growth in the presence of smaller doses. Such a critical extrabacterial concentration could hardly be expected in any tissue in which extracellular bacteriophage is denatured, bound, removed or diluted by such factors as circulation, lymph flow or urinary secretion. Bacteriophage therapy, therefore, would be a predictable disappointment in erysipelas, furunculosis, pneumonia, pyelitis, cellulitis and bacteremia, and in cystitis except by concentrated irrigation. The use of this therapy would thus be practically limited to such closed organs as the intestine and to well encapsulated pus cavities. If bacteriophage should prove to be the therapy of choice in but one of these conditions, it would amply repay for the past fifteen years of false starts and clinical disappointments.

Current Comment

THERAPEUTIC POSSIBILITIES OF
GASTRIC MUCIN

The variegated manifestations of the common cold and its analogues include extensive mucous secretions and expectorations. Mucus is derived not only from the nasopharynx or other parts of the respiratory tract but also from the other mucous membranes. Mucus usually awakens memories of a thoroughly objectionable product of disordered membranes. Nevertheless it is mostly a blessing to the human economy. It catches and holds many objectionable invaders, it makes possible a more comfortable passage of otherwise irritating food masses along the many feet of the gastro-intestinal canal, it smooths over the roughened edges of injurious objects, such as glass and iron particles, that have found their way down the esophagus. The compensatory virtues of mucus are moreover not fully covered by the recital of such physical functions, for its components are distinctly antacid in character. Thus the gastric mucus aids in protecting the cells from digestive or 'erosive' damage by the acid that is poured into the lumen of the stomach when the gastric glands are active. Undue secretion of mucus in the stomach is responsible for lowering of the gastric acidity, just as proteus tend to 'bind' free hydrochloric acid. The actual capacity of mucus to produce such an effect has been verified by Fogelson¹ at the Northwestern University Medical School. Mucin prepared from hogs' stomachs was more potent than equivalent amounts of common protein foods such as gelatin meat and egg white. The use of the product in a few human patients with definite histories of ulcer and typical roentgenographic evidence of peptic ulcer was interesting. In addition to the customary bland diet an ounce of powdered mucin was added to each meal and about 1 Gm. of mucin in tablet form given

1. Twort, F. W. An Investigation of the Nature of Ultramicroscopic Virus. *Lancet* 2: 1241 (Dec. 4) 1915. Filter Passing Transmissible Bacteriolytic Agents (Bacteriophage) *ibid.* 2: 1014 (Nov. 15) 1916.

2. Krueger, A. P. A Method for the Quantitative Determination of Bacteriophage. *J. Gen. Physiol.* 12: 55 (May 20) 1929.

3. Krueger, A. P. and Northrop, J. H. The Kinetics of the Bacterium-Bacteriophage Interaction. *J. Gen. Physiol.* 14: 225 (Nov. 20) 1930.

1. Fogelson, S. I. The Treatment of Peptic Ulcer with Gastric Mucin. *Proc. Soc. Exper. Biol. & Med.* 28: 135 (No. 1) 1933. *The Journal* this issue 1933: 673.

hourly. All these patients were relieved of subjective symptoms within three days of treatment. There was no recurrence of pain for many weeks. The history of the treatment of peptic ulcer with its stories of remissions under all manner of treatments is too familiar to warrant any undue enthusiasm about any novelty, however well authenticated. In any event, this research lends a little new dignity to a much despised physiologic substance.

DEFICIENCY OF VITAMIN AND TOXEMIA

The expression "toxemia" is drawn into service at present as an explanation for a variety of manifestations of disease for which no clearer interpretation is available. At one time or another several of the glands of the organism, such as the thyroids or adrenals, have been alleged to be connected in function with the destruction or detoxication of hypothetical "poisons," usually assumed to be endogenous in character. In the failure of the normal behavior of the glands the resulting disorder was quite naturally, though by no means always logically, attributed to a "toxemia." This sort of explanation has been applied to the appearance of neuritic symptoms in cases of deficiency of vitamin B. As Cowgill¹ has recently pointed out, the startling cures that occur following the administration of vitamins to so-called polyneuritic pigeons, in which nerve degeneration can be demonstrated so readily, can hardly be explained as due to sudden correction of the degenerative changes in nerves. This has led many investigators to favor the idea of toxemia. It has been suggested, he adds, that the toxins may be ingested with the food, developed from the materials in the alimentary tract, or be the result of a deranged tissue metabolism. One of the methods supposed to relieve such a condition consists in "washing out" the system by liberal intake of water and producing a vigorous diuresis. This process is sometimes accelerated by the parenteral administration of fluid. The plan has been put to the test in the laboratory of physiologic chemistry at Yale University by Cowgill and his collaborators in the case of animals deprived of their optimal intake of vitamin B by a selected regimen. When they were given large amounts of water by mouth it was found, contrary to what might be anticipated, that the time required for the appearance of the anorexia characteristic of a lack of this dietary essential was markedly shortened. Instead of being protected, the animals were invariably rendered more susceptible to the deficiency in the vitamin. Cowgill points out that this result is not in harmony with the hypothesis that the symptoms of a deficiency of vitamin B are essentially those of a toxemia. The urge to eat was restored by administration of mixtures of (undifferentiated) vitamin B. An explanation of the early symptoms when fluids are forced by mouth may be found in the possible removal by diuresis of vitamin still present in the body. If this is correct it may lead to a better therapy of infants suffering from anorexia and anhydremia. Cow-

gill suggests that one phase of the treatment which these infants often receive, namely, subcutaneous, intravenous and rectal administration of fluids, may actually be detrimental in that it washes vitamin B from an already partially depleted body. It seems logical, in the light of the experiments here reported, to combine the recognized and approved methods of treatment of such cases of marasmus with the administration of some potent source of vitamin B. Certainly sufficient evidence is at hand, he concludes, that trials of such therapy are warranted. In any event the vague assumption of an existing "toxemia" may no longer be entirely sufficient to the clinician.

Association News

CONTRIBUTIONS FOR MEDICAL SALON IN PERSHING HALL

The sum contributed this week for the Pershing Memorial Paris brings the total to \$2,057.60. A list of those who have contributed during the current week follows:

Charles A. Ivey MD Pittsburgh	Harlow Brooks MD New York
M. S. Henderson MD Rochester	K. J. Newman MD Ward L.
Munn	N. J.
G. F. Campbell MD President	Staff of St. Joseph's Hospital
Chas. W. Wash MD Ser. Isle City	Waverly Iowa
A. J.	I. Dale Huffman MD
George J. Euell MD Madison	Angeles
Robert B. Sweet MD Long	William Cerr, Morgan M
Bench Calif	Washington D. C.
M. P. Messenger MD Oakfield	P. F. Metz MD Thermop.
A. J.	W. O.
John W. Goodheart MD Belling	James J. Waring MD Den.
Wm. Wash	D. E. Little MD Eufaula, O.
Hill F. Warren MD New Ion	Jes. E. Schepps MD Brooklyn
don Conn	S. M. Davenport MD Kings
L. H. Wilmoth MD Iander	P. J.
Wyo.	J. I. Garces MD Amar
John W. Abbott MD Worcester	Texas
Wiss.	Lazelle B. Sturdevant MD Ser.
W. I. Devers MD Upland Neb.	Lieut. C. W. Hardy M. C. U.
Pierre Higgins MD Fort Worth	Army Washington D. C.
Texas	Arthur H. Gross MD Belle
Adam J. Gates MD Tigerton	Pa.
Wiss.	Arvine E. Mozingo MD, Ind
Yoses de Ford MD Philadelphia	apolis
Michael M. Wolfe MD Phila	James L. Hamner MD Me.
delphia	boro Vt.
Robert O. Blood MD Concord	Baxter L. Crawford MD Pl
N. H.	delphia
Edward B. Bigelow MD, Worces	George B. Fletcher MD
ter Mass.	Springs Ark.
	David Chester Brown MD I
	bury, Conn.

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Hints

The American Medical Association broadcasts at 10 a. m. Monday 10 45 on Tuesday, 9 15 on Thursday and 10 30 Saturday, over Station WBBM (770 kilocycles or 389.4 meters). The program for the week is as follows:

- March 2 The Sequel of Some Colds
- March 3 The Mental Grading of Children
- March 5 Some Facts About Yeast
- March 7 Practicing Health in Our Schools

Five Minute Health Talks may be heard over the Columbia Broadcasting System daily except Sundays and holidays from 12 to 12 05 p. m.

The program for the week is as follows:

- March 2 Man's Marvelous Machinery
- March 3 Hygiene
- March 4 Old Age
- March 5 Figures in American Medicine
- March 6 Sleep
- March 7 Sleep

Recently the number of stations on the Farm Community Network have been increased. The stations over which the noon talks may now be heard are as follows: WBBM Chicago, WCCO Minneapolis, WNAX Yankton S. D., KOIL Council Bluffs Iowa, WMT, Waterloo, Iowa, KSCJ, Sioux City,

¹ Cowgill G. R., Rosenberg H. A. and Rogoff J. Studies in the Physiology of Vitamins. IV. The Effect of Administration of Large Amounts of Water on the Time Required for Development of the Anorexia Characteristic of a Deficiency of the Vitamin B Complex. *Am. J. Physiol.* 95: 537 (Dec.) 1930.

Iowa, KFH, Wichita Kan, WIBW, Topeka, Kan, KMBC, Kansas City, Mo KMOX, St Louis, WFBM, Indianapolis, WKRC, Cincinnati, WLAP, Louisville, Ky, WDSU, New Orleans, KLRA, Little Rock, Ark WREC, Memphis, Tenn, WLAC, Nashville, Tenn WDOD, Chattanooga, Tenn, WBRC, Birmingham, Ala, WGST, Atlanta, Ga

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Personal—Edward A. Boyden, Ph.D., professor of anatomy, University of Alabama School of Medicine, has been appointed to a similar position at the University of Minnesota School of Medicine, succeeding Richard E. Scammon, Ph.D. Dr. Boyden will move to Minnesota, June 1.—Mr. W. T. Fales, director, bureau of vital and mortuary statistics, state department of health, has been appointed by the Rockefeller Foundation; it is reported, to cooperate with the Roumanian government in developing its vital statistics. Mr. Fales was to have sailed February 4.

ARKANSAS

Bills Introduced—H. 357 requires all practitioners of the healing art to respond to all calls for their services. If the patients are not able financially to pay for any service, physicians are to be allowed a reasonable fee, to be paid out of the county general fund. S. 317 proposes in effect, to exempt osteopaths from the provisions of the basic science law. S. 322 proposes to repeal the basic science law.

CALIFORNIA

New Student Hospital—The new Ernest V. Cowell Memorial Hospital of the University of California has recently been completed. It is five stories high and incorporates an outpatient dispensary, administrative offices, laboratories and hospital. The students indicate in writing the service desired and the records of the complete physical examination given to all students on matriculation are dispatched to the physician's office to which the patients are assigned. The two lower floors are devoted to administration, waiting and treatment rooms, laboratories and storage rooms. The three upper floors are for hospital purposes and have a capacity of 100 beds. There are eleven wards of four beds each. The fifth floor contains on the east end a suite for the resident physician, a ward and a sewing room, while the west end is devoted to surgery. The building is for sick students at the university; its objective being to show what can be accomplished by scientific preventive and curative medicine and to reduce absenteeism from classes because of illness. The Cowell Memorial Hospital was named in honor of an alumnus who willed a sum sufficient to pay for the greater part of the building. Dr. Robert T. Legge is the university physician. The professional staff consists of a medical director and twenty-eight physicians. During the fiscal year ended June 30, 1930, 70,824 dispensary treatments were given and 954 bed patients were confined to the hospital.

COLORADO

Society News—The recently organized Denver Urological Society elected Dr. Harry H. Wear, 915 Republic Building, Denver, secretary.

Bills Introduced—S. 341 and H. 149 propose to require that all pupils and teachers be immune to smallpox before they attend or teach school. This immunity may be evidenced by (1) having had smallpox, (2) having been successfully vaccinated within five years, or (3) having been vaccinated three times unsuccessfully. H. 75 proposes to require all hospitals, sanatoriums, maternity or lying-in institutions and other institutions for the care of the sick or injured to be licensed by the state board of health. H. 403 proposes to make it the duty of physicians, nurses, midwives or other persons who assist or are in charge at the birth of infants to instill into the eyes of infants within one hour after birth a prophylactic approved by the state board of health.

CONNECTICUT

Bills Introduced—H. 982 to amend the Pharmacy Practice Act, proposes to allow any person, firm or corporation holding a license from the commission of pharmacy to sell drugs in original packages as compounded by a licensed pharmacist to designate the place of sale as a "package drug store." H. 414 proposes to provide (1) that no private institution for the mentally deficient shall receive as a patient any person afflicted with tuberculosis or any other communicable disease or any patient from outside the state, (2) that the attendants in any such institution must have the training of practical nurses, and (3) that inspection of such institutions be made by the state at least once in three months. H. 654, to amend the dental practice act, proposes to add to the causes for which a license may be revoked (1) "the publication or circulation of fraudulent or misleading statements by a licensee, or his agents, concerning the licensee or his employees, or concerning the skill or method or technique of any person or operator, or concerning the employment of accessory agents such as anesthetics or drugs or materials by any person or operator," and (2) "the conviction of any crime involving moral turpitude." H. 979 proposes to grant a license to Ellery G. Peckham of Stamford to practice naturopathy. S. 212 proposes that any licensed nurse who lives outside the state or who practices nursing wholly without pay or material compensation shall register annually with the state department of health but shall not be required to pay an annual registration fee. S. 444 proposes to authorize the state to pay to any charitable institution, hospital or home for the aged not operated for profit or gain and not receiving state aid \$10 a week for each poor and indigent patient suffering from a chronic and incurable disease and treated in such hospital.

DELAWARE

Bill Introduced—H. 129 proposes to create a board of examiners of beauticians and to regulate the occupation of beauty culture.

FLORIDA

Sentenced to Penitentiary—Dr. Francis K. Armstrong, Fort Myers, was found guilty of manslaughter, Dec. 13, 1930 as the result of an illegal operation at his private hospital Oct. 13, 1930. According to the state board of medical examiners, Dr. Armstrong was denied a new trial and sentenced to serve ten years in the state penitentiary.

Personal—At the annual state public health conference, held in Jacksonville Dec. 8-10, 1930, a portrait of the late Dr. Joseph Y. Porter, Sr., first state health officer, was presented to the state board of health by his family. Dr. Joseph N. Fogarty, Daytona Beach, made the presentation address and Dr. H. Mason Smith, Tampa, president of the state board of health, the speech of acceptance.

GEORGIA

Personal—Dr. Frank Z. Story, Millen, has resigned as health commissioner of Jenkins County.—Dr. Owen F. Moran succeeded Dr. Lucius A. Bailey as health officer of Baldwin County recently.

Society News—Dr. Aubrey Edgar Boling, Jr., presented an illustrated lecture before the Fulton County Medical Society, February 5, on Cesarean Section Under Local and Spinal Anesthesia. and Drs. Roger W. Dickson and David H. Poer gave a clinical talk on "The Closed Method of Treatment of Acute Empyema." Dr. William C. Waters, Jr. spoke on "Auricular Fibrillation—Cases Treated with Quinidine Sulfate" before the society February 19 and Dr. Edgar Fincher, Jr. on "Indications for Laminectomy in Spinal Injuries."

The annual meeting of the Georgia Public Health Association was held January 15-16. Drs. Louis L. Williams of the U. S. Public Health Service and Thomas F. Abercrombie, state health commissioner, spoke on malaria prevention and on prophylactic state and national legislation respectively.

INDIANA

Bills Introduced—H. 405 proposes to regulate the practice of barbering. H. 361 proposes to regulate the practice of cosmetology.

IOWA

Bill Introduced—H. 259 proposes to authorize the issue without examination of licenses to practice dentistry to holders of certificates of the National Board of Dental Examiners.

KANSAS

Bill Introduced—H 524 proposes to authorize the boards of education in certain cities and the governing boards of rural high schools, community high schools and district schools to employ one or more nurses

KENTUCKY

Sentenced for Narcotic Violation—Dr Thomas B Helm, Paducah who was indicted in the United States District Court, Louisville, for violation of the Harrison Narcotic Act Nov. 17, 1930 pleaded guilty and was sentenced Nov. 18, 1930 to serve one year and one day in the United States Penitentiary at Atlanta

Personal—Dr J. W. Davis was elected January 16 to serve as health officer of Fayette County to fill the remaining two years of the unexpired term of Dr Rollin E. May, who resigned January 1.—Dr James S. Lock, Barbourville, has resigned as executive secretary of the Kentucky Tuberculosis Association after several years service

Society News—A symposium on the X rays was presented before the Jefferson County Medical Society, Louisville, January 5. Drs. Sydney E. Johnson, Henry C. Herrmann and Samuel A. Overstreet discussed diagnosis of bone diseases, pulmonary tuberculosis and peptic ulcer respectively, and Drs. David Y. Keith and Isaac T. Fugate roentgen therapy in tumors of the chest and diseases of the blood, respectively. Dr. Lawason Brown, Stram Lake, N. Y., addressed the society, January 19 on 'Diagnosis of Pulmonary Tuberculosis for the General Practitioner'. A symposium on heart disease was conducted before the society, February 2, at Louisville; the speakers were Drs. Woodford B. Troutman, Joseph C. Bell, Emmet F. Horne and Siegel C. Frankel.—The Daviess County Medical Society was addressed, Nov. 4, 1930 by Dr. William B. Negley and Allen L. Kincheloe, Owensboro, on 'Allergic Reactions in Man' and 'Treatment for Bronchial Asthma', respectively.—Dr. John W. Duke, Hindman, was elected president of the Kentucky Valley Public Health Association at a meeting of the society in Hazard, Dec. 19, 1930, among others, Dr. Fred W. Caudill, Hazard, spoke on 'Handling of Communicable Disease Carriers as a Public Health Duty'.—Dr. Wallace T. Patch, Evansville, Ind., addressed the Christian County Medical Society, Hopkinsville, January 20 on 'Differentiation of Angina Pectoris and Myocardial Infarction'.—Drs. Franklin Jelsma and Aura J. Miller, both of Louisville, spoke before the Harlan County Medical Society, Harlan, January 24 on 'Surgery of the Sympathetic System' and 'Pain and Its Relation to Clinical Medicine', respectively

MAINE

Bills Introduced—H 454 proposes to provide that all actions for malpractice against practitioners of the healing art be commenced within two years after the alleged malpractice. H 510 proposes to permit cities and towns to appropriate money to be expended in the city or town where appropriated, under the direction of the state department of health, for public health nursing. H 522 proposes to make incurable insanity of at least three years duration a ground for divorce. H 549 proposes to regulate the practice of cosmetology. H 970 proposes to accord licensure to physicians, nurses and certain hospitals by rendering services to persons injured in accidents, on any settlements or judgments obtained by the injured persons by reason of such injuries

MARYLAND

Bills Introduced—S 47 proposes to regulate the practice of cosmetology. H 94 proposes to require applicants for marriage licenses to file certificates from reputable physicians that the applicants are not afflicted with any contagious disease

Society News—Dr. Francis D. Coman, New York, who accompanied Comdr. Richard E. Byrd's expedition to the antarctic, gave an address, Dec. 16, 1930 at Johns Hopkins University School of Hygiene and Public Health, Baltimore, on 'The Climatology of the Antarctic in Its Relation to Health'. Gilbert F. Otto, Sc.D., and William W. Cort, Ph.D., spoke on 'Environmental Studies of Worm Infested Families in Tennessee'.—At a joint meeting of the Baltimore City Medical Society with the Gynecological and Obstetrical Society, January 9, speakers were Drs. William Schuman, on 'Fractured Pelvis in Obstetrics', William S. Gardner, 'Origin of Ovarian Epithelium', and Howard A. Kelly, use of radium in gynecology.—Dr. Major G. Seelig, St. Louis, addressed the

Oiler Historical Club, January 13, on 'Animal Behavior as a Factor in the Development of Medicine and Surgery'.—Speakers at the Baltimore City Medical Society's meeting, January 23, were Drs. Charles C. Habbston on artificial pneumothorax in the treatment of tuberculosis, Robert T. Miller, Jr., thoracoplasty, and Harvey B. Stone, 'What Should Be the Mortality of Appendicitis?'. The society was addressed, February 20, by Drs. Charles William Victor Richards on 'Dystrophia Adiposogenitalis', Francis F. Schwenker 'Protection of Infant Against Tuberculosis by Specific Inoculation' and Hugh W. Joseph, 'Treatment of Secondary Anemia by Iron and Copper'.—Dr. Lewis W. Hackett, International Health Division, Rockefeller Foundation, addressed the Society of Hygiene at Johns Hopkins University, Baltimore, January 7, on 'The Evolution of Malaria Control in Italy'.—There has been a 56 per cent decrease in the number of cases of communicable disease in Maryland in the last year; it is reported, 14,344 cases were noted in 1930 as compared with 32,639 in 1929.—The Baltimore County Medical Association was addressed, January 21, by Dr. Manuel G. Giehner on 'Acquired Serum Sensitivity', Arthur C. Niemeyer, 'Management of the Occiput Posterior Case', and Frank S. Lyan, 'Diagnosis of Appendicitis'.—Dr. Harvey B. Stone, Baltimore, addressed the Wisconsin County Medical Society, Salisbury, January 7, on 'Rectal Diseases from the Standpoint of the General Practitioner'.—Roentgenologists of Baltimore held a roentgenologic conference, February 6-7, having as their guests members of the New England Roentgen Ray Society, the New York Roentgen Society, the Philadelphia Roentgen Ray Society and the roentgenologists of Washington, D. C. Among the speakers were Dr. William S. Bier, whose subject was 'Treatment of Chronic Osteomyelitis by Maggots', Richard Dresser, 'Hodgkin's Disease of the Bones' and Julius Friedenwald, 'Clinical Significance of Roentgenological Findings in Chronic Appendicitis'.

MASSACHUSETTS

Bills Introduced—H 913 proposes to create a medical research board which shall distribute information obtained by it. H 592 proposes to require applicants for registration as nurses to be citizens of the United States

MICHIGAN

Bills Introduced—S 7 proposes a new act for the examination, regulation, licensing and registration of professional nurses and trained attendants. H 85 proposes to establish a state tuberculosis sanatorium in northern Michigan. H 65 proposes to provide for the registration and supervision of laboratories making chemical, serologic and/or bacteriologic laboratory tests to aid in the diagnosis and/or control of communicable diseases

MINNESOTA

Bill Introduced—H 522 proposes to provide for the sexual sterilization of certain socially inadequate inmates of state institutions

Society News—The annual conference of secretaries of the component societies of the Minnesota State Medical Association was held at St. Paul, February 7. Drs. Edward Starr Judd, President-Elect, American Medical Association, Rochester, and Ludwig L. Segge, Windom, president, Minnesota State Medical Association, were among the speakers.—Dr. Frank E. Burch, St. Paul, gave an illustrated address before the Minnesota Academy of Medicine, February 11 on 'Operative Treatment of Squint by Tucking Method'. Dr. George N. Ruhberg, St. Paul, presented a thesis on 'Paresis and Malaria'.

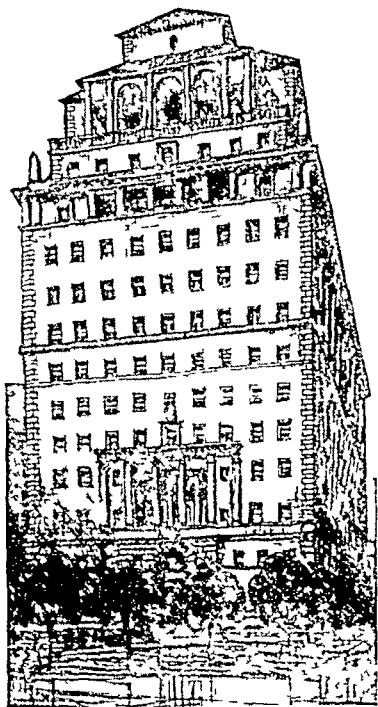
MISSOURI

Licenses Revoked—The license of Dr. Eric Anderson, Kansas City, was revoked by the State Board of Health of Missouri, Dec. 6, 1929. He was convicted of manslaughter by abortion, June 29, 1929, and was sentenced in the Jackson County circuit court to two years in the state penitentiary. He appealed to the Missouri Supreme Court, which affirmed the sentence of the circuit court, Dec. 19, 1930. The license to practice medicine in Missouri of Dr. Collis I. Roundy, St. Joseph, was revoked at a meeting of the State Board of Health of Missouri, January 26, for one year on the charges of unprofessional and dishonorable conduct.

Bills Introduced—S 224 proposes to provide for the vaccination of dogs against rabies. H 368 proposes to prohibit

the exclusion of children from school or the discharge of employees from service because they have not been vaccinated and are not otherwise immune to smallpox. H 426 proposes to establish a hospital for the inmates of Missouri prisons suffering with tuberculosis and other lingering diseases. H 403, to amend the workmen's compensation act proposes, among other things, (1) that an employer furnish an injured employee with necessary medical and hospital care for the first ninety days after the injury and in a sum not to exceed \$750 and (2) that every hospital or person rendering medical aid to the injured employee shall furnish on request full information to the commission, the employer or the employee.

New Research Institute and Hospital—The \$1,500,000 fourteen story building for the McMillan Hospital and Oscar Johnson Institute of Washington University, St. Louis, was opened in January. It was made possible by a bequest of about \$1,200,000 to the university from the late Mrs. William McMillan, St. Louis for an eye, ear, nose and throat hospital, and by a gift of \$650,000 from Mrs. Oscar Johnson her sons and two friends in memory of Mr. Johnson. Other gifts brought the McMillan fund to \$1,500,000, thus providing also for an endowment. On the first and ground floors are eye, ear, nose and throat clinics, administration offices, kitchen and service rooms. The second floor has six operating rooms, an auditorium seating 120 persons, a conference room and locker rooms for visiting physicians, nurses and medical social workers. The next five stories provide 150 beds, two floors being for private and semi-private patients of the full time and visiting staffs. One floor is for Negro patients, one for white ward patients and one for the care and study of infectious diseases of the eye, ear, nose and throat. The six upper floors will house the Oscar Johnson Institute for research and teaching ophthalmology and otolaryngology. Full time departments in these subjects are financed by a grant from the General Education Board of the Rockefeller Foundation. One floor is devoted to research in physics and physiology as applied to ophthalmology and otolaryngology. Three other floors planned for research in chemistry and bacteriology will be immediately put to use by a grant of \$50,000 a year for a period of five years by the Commonwealth Fund for a comprehensive investigation of trachoma. A roof garden furnishes recreational facilities for the staff and a sun parlor for the patients. The following appointments among others are listed: C. C. Bunch, Ph.D., as professor of applied physics, department of otolaryngology; William F. Werner, Ph.D., instructor in otolaryngology; George Holman Bishop, Ph.D., professor of applied physiology, department of ophthalmology; Dr. Percy Wells Cobb, associate professor of applied physics (ophthalmic staff); Dr. Harvey D. Lamb, assistant professor of ophthalmic pathology; Dr. Lee Wallace Dean, head of the department of otolaryngology; Louis A. Juhnke, Ph.D., associate professor of applied bacteriology and immunology, department of ophthalmology; R. Wendell Harrison, M.S., instructor in applied bacteriology and immunology; James A. Hawkins, Sc.D., associate professor of applied biochemistry in ophthalmology; and Alfred M. Lucas, assistant professor of cytology in otolaryngology. Rosalene A. Hetler, Ph.D., will have charge of the chemical studies of vitamin and food deficiencies and of the allergies in relation to eye diseases. Dr. Harvey I. Howard will direct research in ophthalmology and Dr. Lee Wallace Dean research in otolaryngology.



MONTANA

Bills Introduced—H 285 proposes to require the annual registration of practitioners of medicine or surgery and the payment of an annual fee of \$5 by each of them. S 68 proposes to make it the duty of all practitioners of the healing art who know or suspect that persons treated or examined are suffering from any communicable disease or any disease designated as notifiable in the regulations of the state board of health, to report such cases in writing to the county or local health officer having jurisdiction over the area in which such cases are located. H 102 proposes to accord liens to physicians, nurses or hospitals treating persons injured through the fault of another on any compromise, settlement or judgment obtained by the injured persons by reason of the injuries.

NEBRASKA

Bill Introduced—S 183 proposes that no person, other than licensed practitioners of medicine, surgery, osteopathy, chiropractic, dentistry, optometry or chiropody, or persons operating under their general supervision as assistants, shall in any manner whatsoever use, in connection with the human body, the roentgen ray machine in such a manner that roentgen rays shall penetrate any portion of a human body.

NEW JERSEY

Bills Introduced—S 155 proposes to authorize the medical examining board to examine in anatomy, physiology, hygiene, diagnosis of disease, histology, neurology, philosophy of naturopathy and practice of naturopathy persons who on March 31, 1921 were graduates of legally incorporated schools recognized by the board and teaching naturopathy, and who at that time were residents of New Jersey. If such persons receive a general average of 70 per cent or better the board must issue to them limited licenses to practice naturopathy. S 161 proposes to amend the law allowing charitable hospitals liens, by according such liens to all hospitals. A 192 makes insanity for fifteen years a ground for divorce. S 202 proposes to make it unlawful for any manufacturer, wholesale dealer or retail dealer, engaged in the sale or distribution for resale of drugs, medicines or poisons, to sell for resale such drugs, medicines or poisons to any retail merchant who is not permitted by law to sell them. S 221 requires the annual registration of pharmacists.

NEW MEXICO

Bills Introduced—S 72 and H 181 propose to require that applicants for licenses to practice any form of the healing art pass examinations in anatomy, physiology, chemistry, bacteriology and pathology to be given by a board of basic science examiners, before presenting themselves to their professional or cult boards for examination. H 123 proposes to create the office of inspector for the state boards of pharmacy, medical examiners and dental examiners to aid those boards in the enforcement of the medical, pharmacy and dental practice acts.

NEW YORK

Report on Lead Poisoning—The Bureau of Industrial Hygiene of the New York State Department of Labor has begun a series of investigations of industrial diseases in order to accumulate information for the conservation of the health of workers and the administration of compensation laws. Lead poisoning which ranks first in industrial diseases is the subject of the first report. Of 381 workers studied in twenty-five plants of fifteen industries 232 or 60.8 per cent gave definite evidence of lead absorption. The highest incidence, 100 per cent was found among lead burners who are exposed to fumes of lead oxide. Workers between 16 and 18 years of age were found most susceptible the incidence being 87.5 per cent. Duration of exposure appeared to be of little importance, 19 out of 28 workers who had been exposed for less than two months showed active lead absorption. The report presents in detail the results of the physical examinations and discusses symptoms, treatment and prophylaxis and relation to compensation. The bureau proposes that the term lead absorption be adopted to cover cases in which there is laboratory or other positive evidence that lead has been absorbed into the body whether or not there are clinical manifestations of disease. The term lead poisoning should be reserved for the investigators believe for cases in which toxic episodes such as lead colic, lead palsy and encephalopathy occur.

Bills Introduced—S 739 and A 1029 propose to make it a misdemeanor for any person to sell for purposes of resale

the United States Pharmacopeia or National Formulary preparation to any person, firm or corporation not registered with the board." S 740 proposes to require all packages containing barbituric acid to be so labeled. A 785, to amend the workmen's compensation act, proposes to designate as compensable occupational diseases any and all disabling diseases and disabling illnesses contracted in "any and all employments." S 594 proposes to provide for threefold damages for injuries caused by the unlawful furnishing, supplying or administering of dangerous drugs or medicines. A 980 and S 447 to amend the workmen's compensation act propose to make compensable any occupational disease or illness that is directly due or caused by any employment coming within the provisions of the act. A 911 to amend the workmen's compensation act provides compensation for disability or death which is not wholly due to or results from accidental injury arising out of and in the course of an employment. A 817 proposes that no hospital supported wholly or in part at public expense shall hereafter charge any fee or other compensation for medical services rendered while operating a clinic to which the public is invited, and that every such service rendered shall be without charge to the patient. A 786 to amend the workmen's compensation act proposes in effect to allow injured employees to select their own physicians. A 656 proposes to provide that all cosmetics be labeled to show that they are not injurious, the name of the compounder and the date of compounding and to require manufacturers of cosmetics to file their formulas with the state public health department. A 636 proposes to regulate the practice of chiropractic defined as diagnosis the palpating and adjusting by hand of the vertebral column and tissues. This shall not include the use of operative surgery or obstetrics or the administering or prescribing of drugs or medicine included in the pharmacopeia or materia medica.

New York City

One Thousand Five Hundred Welfare Societies—The 1931 issue of the Directory of Social Agencies, published by the Charity Organization Society in cooperation with the Welfare Council of New York City and twenty-four other organizations, lists approximately 1,500 organizations caring for the health, education, recreation, general welfare and relief needs of the city. Of this number, 518 are engaged in family welfare work, 557 in child welfare work, 651 in education, recreation or neighborhood activities and 655 in health work. There are in addition about 1,400 clinics, most of which provide free or nearly free health and medical services. More than 250 of the agencies listed are the headquarters of national or international welfare organizations.

Friday Afternoon Lectures—The spring series of Friday afternoon lectures given by the Medical Society of the County of Kings began, February 27, with Dr. Charles H. Smith, Manhattan, speaking on "Infant Feeding for the General Practitioner." Dr. Charles G. Heyd will present an illustrated address, March 6, on "The Liver and Gallbladder in Abdominal Infection," March 13 Dr. Elliott P. Joslin, "Role of the Practitioner in Preventing Diabetes and Diabetic Mortality," March 20, Dr. Joseph F. McCarthy, Manhattan, "Roentgenographic Delineation of the Urogenital Tract," March 27, Dr. Walter L. Niles, Manhattan, "Effects of Digitalis Therapy in Pneumonia," April 10, Dr. Paul A. O'Leary, Rochester, Minn., "Treatment of Syphilis," April 17 Dr. Binford Thronc, Brooklyn, "The More Common Skin Diseases," April 24 Dr. Foster Kennedy, Manhattan, "Relationship of the General Practitioner to Neurological Problems," May 1, Dr. Ralph I. Lloyd, Brooklyn, "The Protruding Eye as a Diagnostic Problem," and May 8 Dr. Joseph C. Regan, Brooklyn, "Use of Sera in Treatment of Acute Infectious Diseases."

NORTH DAKOTA

Bill Introduced—S 214 proposes to make it a misdemeanor for any person to experiment or operate on any living dog or cat for any purpose other than the healing or curing of the animal.

Licenses Revoked and Restored—At a meeting of the North Dakota State Board of Medical Examiners at Grand Forks January 8, the license of Dr. Charles I. Spannare, Fargo, to practice medicine and surgery in the state was revoked. Dr. Spannare pleaded guilty in the federal court to a charge of selling narcotics. The license of Dr. William R. Shortridge Flasher, who was pardoned by the state pardon board after serving five years of a ten year sentence in the state penitentiary at Bismarck for performing a criminal abortion, was restored.

OKLAHOMA

Bills Introduced—H 51 proposes to fix a rate which physicians may charge for professional calls. The rate is not stated and is apparently to be decided in the legislative committee in perfecting the bill. H 145 proposes to allow coroners a fee of \$5 for each inquest held and 10 cents per mile for travel while discharging their duties.

OREGON

Bills Introduced—S 250 proposes to create a department of osteopathy in the University of Oregon. S 252 proposes to make it the duty of all hospitals supported in whole or in part by public revenue or exempt from taxation to afford to all practitioners of the healing art the right to practice therein. S 255 proposes that certificates from licensed physicians stating that both parties to a proposed marriage are free from communicable diseases be required before licenses to marry are issued. The present law requires such a certificate only with respect to males. S 251, to amend the workmen's compensation act, proposes to allow injured employees the right to select their own physicians.

PENNSYLVANIA

Society News—Dr. Charles H. Marcy addressed the Pittsburgh Pediatric Society, February 13, on "Childhood Type of Tuberculosis," and Dr. Louis M. Kochin presented a case of epituberculosis—"Pulpluss Teeth as Foci of Infection" was the topic of discussion at a joint meeting of the Allegheny County Medical Society and the Odontological Society of Western Pennsylvania, February 17, in Pittsburgh the speakers were L. A. Wolf, Ph.D., L. E. Van Kirk, D.D.S., W. F. Swanson, D.D.S., Dr. Norman C. Ochsenhult and Dr. Joseph H. Barrich.

Philadelphia

Personal—Dr. Eugene Leroy Mercer has been appointed dean of the department of physical education of the University of Pennsylvania. Dr. William C. Ryan recently celebrated his twenty-third anniversary in the bureau of police, where he is assistant chief surgeon.

Society News—Dr. John R. Calk, St. Louis, delivered the annual B. A. Thomas Memorial Lecture before the Philadelphia Urological Society, February 23, on "Instrumental Treatment of Prostatism." Dr. Elliott P. Joslin, Boston, addressed the Philadelphia County Medical Society, February 25, on "Diabetes Mellitus: Diagnosis, Prognosis and Treatment." Dr. Frank C. Hammond, among others, addressed the Obstetrical Society of Philadelphia, February 5, on "Abdominal Operations During Pregnancy."

SOUTH DAKOTA

Bills Introduced—S 63 proposes to provide for a statewide census of the feeble-minded and for filing a list of the names obtained thereby with all marriage license issuing agencies. No marriage license may issue if one or both of the parties appear on the foregoing list. H 160, to amend the workmen's compensation act, provides that an injured employee be entitled to compensation for hernia must prove (1) that the hernia did not exist prior to the date of the accident and (2) that it was immediately preceded by an accident arising out of and in the course of the employment. If an employee refuses to submit to an operation he shall not be entitled to compensation.

TEXAS

Bills Introduced—S 182 proposes to accord hospitals treating persons injured by accident a lien on any settlements, compromises or judgments obtained by the injured persons by reason of such injuries. S 247 proposes to create an institution for crippled Negro children and to charge the state board of control with its location, construction, establishment and maintenance. H 272 proposes to regulate the practice of dental hygiene and to provide for the examination and licensing of such practitioner by the board of dental examiners. The licenses to be issued are to authorize such practitioners to remove calcareous deposits, accretions and stains from the exposed surface of teeth and just beneath the free margin of the gum, and to prescribe and apply any ordinary wash or washes of a soothing character, but not to perform any operation on the teeth or other tissues of the oral cavity. H 309 proposes to authorize the establishment of a new state hospital for the care of the insane, to be known as the West Texas State Hospital. H 400 proposes to authorize the construction

and maintenance of a hospital as a part of the prison system of the state, for the treatment and incarceration of all criminal insane. S 171 proposes a new law regulating the production, sale, dispensing and other traffic in narcotic drugs.

UTAH

Bills Introduced—S 48 proposes to accord liens to hospitals treating persons injured in accidents, on any judgments, settlements or compromises obtained by the injured persons by reason of such injuries. H 100 provides that accredited training schools for nurses shall allow no student to matriculate who has not had the equivalent of a high school education.

VERMONT

Bill Introduced—S 23 proposes to provide for the sexual sterilization of certain socially inadequate persons.

VIRGINIA

Health at Richmond—Telegraphic reports to the U. S. Department of Commerce from eighty-one cities with a total population of 36 million, for the week ended February 7 indicate that the highest mortality rate (24) appears for Richmond and the rate for the group of cities as a whole, 14.3. The mortality rate for Richmond for the corresponding period last year was 17.1, and for the group of cities, 13.7. The annual rate for eighty-one cities for the six weeks of 1931 was 14.2 as against a rate of 13.2 for the corresponding weeks of 1930. Caution should be used in the interpretation of these figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

WASHINGTON

Bills Introduced—S 96, to amend the workmen's compensation act, proposes to define 'injury,' as used in the act to mean an injury resulting from some fortuitous event and to all other injuries, including occupational diseases growing out of and incidental to the employment. S 55 proposes to authorize certain school districts to maintain and operate dental clinics. H 239 proposes to permit dentists and dental students to obtain and possess human dead bodies for the purpose of anatomic inquiry or instruction. H 169 proposes that hereafter a person convicted of a capital offense shall not be entitled to any inquisition or trial to determine his sanity. On satisfactory evidence being presented to the governor however that any person convicted of a capital offense has become insane subsequent to the conviction the governor may cause such person to be examined by such experts as he, the governor, may choose.

WEST VIRGINIA

Bills Introduced—H 165, to amend the workmen's compensation act, proposes to make employers liable for such sums for medical, surgical dental and hospital treatment accorded an injured employee as may be reasonably required not however, to exceed \$800. S 105 proposes to prohibit the sale and distribution of veronal, barbital, or any preparation or compound containing diethylmalonyl urea or diethylbarbituric acid, except on the written prescription of a physician. H 218 proposes to authorize the public health council to issue certificates to practice medicine and surgery to all persons who apply before Jan. 1, 1932, who have had two years study in a recognized medical school and who at the time of said study have had twenty years experience practicing medicine and surgery in the state.

WISCONSIN

Bill Introduced—S 71 makes it unlawful to sell any food drink, medicine or toilet preparation intended for human use, or any antifreeze agent for motor vehicle radiators which contains wood alcohol, methanol or methyl alcohol. Sales may be made only in containers labeled 'poison.'

WYOMING

Bills Introduced—S 5 proposes among other things to amend the medical practice act by stating the procedure to be followed by a licensee in appealing to the court from a decision of the board of medical examiners revoking his license to practice. S 49 proposes a new pharmacy practice act. H 187 proposes to make it unlawful for the board of trustees or the governing board of any hospital supported in whole or in part by public revenue to refuse to allow any licensed practitioner of the healing art to practice in said hospital.

GENERAL

Society News—The seventeenth annual observance of National Negro Health Week will be conducted, April 5-12. The objective for this year's observance is the establishment of National Negro Health Week on a year-round basis. It is requested that the results of the health week be sent to the National Negro Health Week Committee, Howard University, Washington, D. C.

International Hospital Congress—The second International Hospital Congress will be held in Vienna in the early part of June. A pre-convention tour of study and inspection of hospitals in London, Copenhagen, Berlin, Prague and Budapest is planned for the American contingent. It is expected that an international hospital association will be formed during the congress. Details may be obtained from E. H. L. Corwin, Ph.D., secretary general, 2 East One Hundred and Third Street, New York.

Translation of Incomplete Credentials—Frequent requests for translation of American certificates covering only high school and one year college work have been reported to state boards of medical examiners recently. It is said that students who submitted these incomplete credentials have been directly admitted to foreign medical schools, probably because of a misapprehension on the part of foreign university authorities of the nature of American schools. The practice is believed to be a definite attempt to shorten the required American college course.

Report of Ella Sachs Plotz Foundation—According to the seventh annual report of the Ella Sachs Plotz Foundation for the Advancement of Scientific Investigation seventy-eight applications for grants were received during the last year, sixty-two of which came from twelve different countries in Europe and Asia and sixteen from the United States. Twenty-five grants were made, one of these being a continued annual grant. Twenty-one new grants were made to scientists in countries outside the United States. In the seven years of its existence, the foundation has made 120 grants to investigators in various countries. In accordance with the policy of giving preference to researches on a single problem, four investigations aided in 1930 bore on the general subject of nephritis. In 1929 there were seven, in 1928 three and in each of the four preceding years four grants for work in this field. Applications for grants for the year 1931 should be in the hands of the executive committee before May 1 and should include statements as to the character of the proposed research, the amount of money requested and the objects for which the money is to be expended. Applications should be sent to Dr. Joseph C. Aub, Collis P. Huntington Memorial Hospital, 695 Huntington Avenue, Boston.

Medical Aid in Drought Area—Plans for medical relief in the states that have been most severely affected by the drought were formulated at a conference of health officers called by Dr. Hugh S. Cumming, surgeon general of the U. S. Public Health Service, at Memphis, Tenn., February 10. The problem is to be approached from five different angles according to the local situation. Under the federal appropriation of \$2,000,000 existing county or local health units are to be aided by the assumption of obligations when local funds are lacking on account of inability to collect taxes, bank failures or other justifiable causes and by the employment of additional personnel to meet emergency needs as a temporary measure only. County health units will be established in counties which have no organization on the following conditions: that at least one-third of the expense be borne by the local authorities; that one-third be borne by the state; or that at least one-half of the expense be borne by the state and local authorities together. Mobile health units to provide temporary health services will be furnished as part of the state health administration to be supported by state funds to the greatest extent possible. Individual county nurses and sanitary inspectors are to be provided for counties in which they are needed and in which organized health departments cannot at present be maintained. Finally, state boards of health are to be supplemented by supervisory personnel if needed for emergency work.

Medical Bills in Congress—H. R. 17039, introduced by Representative Leavitt, Montana, proposes to construct and equip a hospital on the Blackfeet Indian Reservation, Montana. The House Committee on Rules has voted a special rule for the consideration of S. 255, the Jones maternity, infancy and rural hygiene bill which will bring the bill before the House for consideration probably during the week ending, February 26 (H. Res. 369). S. 5465 has been reported to the House without

amendment, enabling institutions incorporated under the laws of the District of Columbia and conferring any and every kind of degree, whose activities are carried on exclusively in a foreign country, to use in their titles the words "American," "Federal," "United States," etc (H Rept 2751) S 5959 has passed the Senate authorizing the Secretary of the Treasury to purchase the laboratory of the state of Montana, constructed for the prevention, eradication and cure of spotted fever. A similar bill in the House, H R 16915, has been favorably reported to the House with amendments (H Rept 2798) S 5984 has been favorably reported to the House, without amendment, providing for the erection, for the District of Columbia of a sanatorium for adult tuberculous persons (H Rept 2759) S 6171 has passed the Senate, regulating the prescribing and use of waters on the Hot Springs Reservation, at Hot Springs, Ark. A similar bill in the House, H R 14275, has been reported to the House, with amendment (H Rept 2677) S 1812 has been reported to the House, without amendment, authorizing the annual collection of statistics relating to crime and to the defective dependent and delinquent classes (H Rept 2757) H J Res 480 has been reported to the House, without amendment, authorizing an appropriation to defray the expenses of participation by the United States in the conference on the limitation of the manufacture of narcotic drugs to be held at Geneva, May 27, 1931 (H Rept 2688) H R 4811 has been reported to the House without amendment, authorizing the Bureau of Mines to manufacture 1 gram of radium (H Rept 2802) H R 16658 has passed the House authorizing an appropriation of \$2,850,000 for additional hospital and domiciliary facilities at the branches of the Bureau of National Homes. H R 16982 has passed the House, authorizing an appropriation of \$12,500,000 for additional hospital, domiciliary and outpatient facilities for veterans. This bill has been favorably reported to the Senate, with amendments which, among other things, propose to increase the appropriation authorized by the bill to \$20,877,000 (S Rept 1665) S 6147 introduced by Senator Hatfield West Virginia proposes to authorize the construction of a veterans hospital in northern West Virginia. S 6178 introduced by Senator Bingham, Connecticut, and H R 17140, introduced by Representative Goss, Connecticut, propose to regulate the use and sale of wood alcohol. H J Res 505, introduced by Representative Celler, New York, proposes to remove the frequency and quantity limitations imposed on physicians with respect to the prescribing of vinous and spirituous liquors. H R 17094, introduced by Representative Leavitt, Montana, proposes to construct and equip a hospital on the Rocky Boy Indian Reservation in the state of Montana.

Deaths in Other Countries

Emil Fronz, author of books on children's diseases, Dec 31, 1930, aged 70.—Archibald Leitch, director of the research institute of the London Cancer Hospital and professor of experimental pathology, University of London, January 28, aged 52.

Government Services

Resignations from the Navy

The following resignations from the navy have recently been announced: Lieut Jasper S. Hunt, effective January 3, Lieut Paul H. Milton, effective Dec 28, 1930, Lieut William C. McBride, effective Nov 28, 1930, Lieut Comdr William A. Stoops, effective February 1, Lieut Connie H. King, effective Dec 13, 1930, Lieut Roland G. Vaughan, effective January 6, Lieut Harold Simons, effective March 22.

Change of Station in the Navy

Lieut Comdr Rex H. White to duty involving flying, commander carrier division 1 U S Fleet. Lieut Bartholomew W. Hogan to the naval hospital Washington, D C. Lieut Julian Love from the Receiving Ship to the naval hospital New York. Capt Holton C. Curl detached as assistant chief of bureau of medicine and supplies and ordered to duty as district medical officer, fourth naval district Philadelphia, Lieut Comdr William D. Davis to marine barracks, Quantico, Va. Lieut Wilbur F. Kellum from the U S S *Maryland* to the U S Naval Medical School Washington D C. Lieut Farra L. Read from the Asiatic Squadron to the United States, Lieut John D. Foley from the naval hospital, New York, to

the U S Receiving Ship, San Francisco, Capt John B. Deane to the bureau of medicine and surgery as assistant to the chief of the bureau, Capt Richmond C. Holcomb to command the naval hospital, League Island, Philadelphia, Lieut Edward E. Evans from the U S S *Pittsburgh* to the fourth regiment U S Marines, China, Lieut Comdr Walter A. Fort from the naval hospital, New York, to the Asiatic Station, Lieut Wilfred P. Dana from the naval air station Hampton Roads, Va. to the first brigade, U S Marines, Haiti, Capt Edgar L. Woods from the Receiving Ship, New York, to the Bureau of Medicine and Surgery. Lieut Harold I. Brown from the naval training station, San Diego, Calif., to the U S S *Henderson*.

Examination for Entrance Into Public Health Service

Examination of candidates for commission as assistant surgeon in the regular corps of the U S Public Health Service will be held at Washington, D C, March 9. Candidates must be 23 years and not over 32 years of age. They must have been graduated in medicine at a reputable medical college and have had one year's hospital experience or two years professional practice. They must satisfactorily pass oral, written and clinical tests before a board of medical officers, and undergo a thorough physical examination. Surgical candidates will be recommended for appointment by the President, with the advice and consent of the Senate. Request for information or permission to take this examination should be addressed to the surgeon general, U S Public Health Service, Washington, D C.

Report of Food and Drug Administration

The report of the Food and Drug Administration U S Department of Agriculture for the year ended June 30, 1930, shows that 1,105 seizures and prosecutions of domestic products were made and that 3,433 import samples were detained. In the course of the operations 36,068 samples of food and drugs were collected and examined. Of these 3,347 were examined for arsenic, a precaution necessary because of its use as a spray for fruit trees. Sixteen outbreaks of alleged food poisoning were investigated and pathogenic bacteria were identified in five. Work conducted by the administration in the control of traffic in fresh, dried and canned fruit infested with worms centered to a large extent on figs, 625 lots (20,725,310 pounds) of which were examined, of this quantity 2,853,840 pounds were reexported and 870,000 pounds destroyed. Improvement has been made in the quality of canned salmon, only three prosecutions having been made. In the tuna fish industry, however, investigators found conditions similar to those that had existed in the salmon industry. In cooperation with the California state board of health a vigorous campaign was carried on in which twenty-four seizures were made, and the system of state inspection was extended to insure better local control. More than 5,000 cases of canned tomatoes adulterated with water were seized. Thirty-five carloads of frost damaged grapefruit and oranges were condemned before they were shipped from the citrus belt of Texas. Under the federal tea act, 207,884 pounds of tea were rejected, of 84,732,677 pounds offered for importation during the year. During the year 5,748 samples of milk were examined under the federal import milk act, which applies principally to milk from Canada. An excessive bacterial count was found in 369 samples. 584 plants and 4,127 dairy farms were inspected. 108 permits were suspended. Two hundred and forty-nine seizures of falsely and fraudulently labeled proprietary medicines were effected, it was claimed that 135 of these were remedies for influenza. Ninety-seven court actions involving adulterated or misbranded pharmaceutical preparations were brought during the year. Thirty-nine consignments of ether that failed to meet pharmacopeial standards were removed from the market. The administration cooperated with the Bureau of Prohibition and state health officials in the seizure of twenty-two lots of a product sold as Jamaica ginger. In the field of research the administration reports the development of a biologic test for ergot, methods for determining the presence of tartaric and citric acids and work on similar problems. Assistance was given to the Post Office Department in the handling of 130 cases in the effort to eliminate from the mails such contraband materials as fake medicines, cure-alls and poisons. Thirty-six cases were disposed of as follows: fraud orders issued in 12, penitentiary sentences imposed in 2, grand jury indictments issued in 3, prosecutions abandoned because of insufficient evidence in 2, seventeen concerns discontinued business. The name of the organization was changed, July 1, 1930 to the Food and Drug Administration.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Jan 31, 1931

The Sun Treatment of Tuberculosis in England

When the sun treatment of surgical tuberculosis was established, mainly by work of Auguste Rollier at Leysin, Switzerland, the idea prevailed that the more sunny climates of the continent and the high altitudes of the Swiss mountains were if not necessary, a great advantage. But the sun treatment of tuberculosis has been so developed in England by Sir Henry Gauvain at the Treloar Cripples Hospital and College Alton (Hampshire) and at its marine branch (Sandy Point Hayling Island) that equally good results are now claimed. Indeed, in his recent residential address to the congress of the Royal Institute of Public Health, Sir Henry Gauvain declared that, in spite of its high proportion of cloudy and misty days, the English climate had the advantage. If sun treatment is of such value in the prevention and treatment of disease, why not send the patient, people asked to the most sunny climate possible? To this Sir Henry replied by another question. Is mortality appreciably lower in countries regarded as ideal for insolation? Is tuberculosis appreciably less? The reply is in the negative. On equatorial islands where sunlight is always obtainable and the islander can live nude all the year round, tuberculosis will rapidly infect and kill the unimmunized native. The results of the sun treatment are in some cases brilliant, in others disappointing. This Sir Henry explains by his 'theory of varying stimuli and varying response. No completely satisfactory explanation has been given of the value of the general light bath. Sonne's statement that it largely depends on thermal effect is not adequate, nor does the raising of hemobactericidal power furnish the clue. Sir Henry Gauvain suggests that the good effects depend on the stimulus of seasonal and even hourly variation in the conditions of exposure—the position of the sun in the heavens, the density and purity of the atmosphere, the amount of sky shine and the intervention of passing clouds. The morning light though less intense than that of midday has the greatest value because of the light shock following the darkness that has preceded. Continuous exposure to sunlight in summer is not so beneficial as alternations of light and shade and of heat and cold. Sun treatment is greatly aided by the associated aerotherapy—the stimulus to the production of heat by the body produced by the impact of cold air. Therefore the English climate by its very changeableness lends itself to open air treatment. Sun treatment is shock treatment comparable to protein shock.

The report, just issued of the Treloar Cripples Hospital shows remarkable successes. Children up to the age of 12 suffering from tuberculous disease of bones or joints and a limited number of general orthopedic cases are admitted. Crippled lads from 14 to 18 are trained in handicrafts. Of 176 patients who had completed their treatment in the year 170 were sent out with the disease arrested. These included 34 cases of spinal disease, 47 of hip disease, 21 knee and 68 of 69 other tuberculous lesions arrested. The marine branch offers the stimulus of climatic change and new environment to patients who need the tonic of seaside conditions. It is found that very crèche and young patients are not benefited to the extent that stronger and older patients are. The stimulus is beyond their power of response. Graduated sea bathing and heliotherapy are given to the bulk of the patients in addition to the ordinary orthopedic and general treatment. Conservatism in the treatment of surgical tuberculosis has been followed ever since the establishment of the hospital twenty-one years ago and is now more firmly established than ever. But the help of surgery is occasionally sought for bone grafting to immobilize

joints more completely, though in children with only a modified success. Sir Harold Gillies and Mr Kilner have done some highly successful and extensive plastic operations for facial restoration following lupus after the disease has been cured by the light department.

A New Study of Diet

Almost all the data as to normal diets are those of foreign investigators. The medical research council decided that a more accurate quantitative knowledge of the normal diets of the inhabitants of this country was desirable for guidance both in health and in disease. It therefore commissioned Dr E P Cathcart, professor of physiology in the University of Glasgow, and Dr A M T Murray to undertake a study of nutrition. This study took the form of an inquiry into the diet of 154 families of St Andrews, Scotland, based on the help given and the records kept by the staff of the James Mackenzie Institute for Clinical Research. It may be remembered that this institution was founded by the late Sir James Mackenzie to undertake clinical research into the early stages of disease, a subject which he held to be important and neglected. The families studied belonged to all classes of the population. One of the main conclusions reached was that for the persons examined the consumption of protein was much below, that of carbohydrate below, but that of fat much above the standards laid down by the accepted authorities. The consumption also deviated in the same directions from the standards recommended by the Royal Society during the war, which were adopted as the basis of the measures taken by the government during the late emergencies of that struggle. The accompanying table shows the results of the present study as compared with the standard diets of Voit and Rubner.

Percentage of Total Calories

	Protein	Fat	Carbohydrate
Voit (moderate work)	16	17	67
Rubner (moderate work)	17	16	67
Present study	11	35	54

Thus the percentage of calories supplied by fat in the population studied was more than twice as great as in the standard diets and even among the poor the percentage was found to be much higher than had been supposed. There is no doubt that the St Andrews diets are in keeping as regards their proportions with the type of dietary common in this country and that they approximate closely to the average for the United States. Another striking point is the relative lowness in protein. The quality as well as the quantity of food consumed was found to be largely a question of income. With rising income the tendency was to purchase foods rich in protein such as butcher meat with sometimes a decrease in the amount of starch consumed. Nevertheless there is a tendency when the income increases to spend more on fat. The miners with their higher wages consume more fat than the agricultural laborers. During the war the shortage of fat was the great trouble in dietary. In certain parts of Europe it was followed by a sharp increase in the incidence of tuberculosis, and when the supply of fats became normal again the incidence of tuberculosis immediately declined.

As regards the total energy value there was no evidence of lavish consumption on the part of those better off though naturally their intake was higher than that of others. A problem which puzzled the investigators was that while 3100 calories a day satisfied the manual laborer the sedentary group consumed more than 3300. Where did the extra calories go? It was agreed that the sedentary class expended much energy in walking and playing games but it was doubtful whether they expended anything like the amount of energy represented by the extra food. It followed therefore that the extra food

must be stored or metabolized in some other fashion. As obesity was not a marked feature of this section of the population it must follow that the explanation was *luxus consumption or secondary dynamic action*.

Action Against Drug Traffickers

The League of Nations Advisory Committee on Traffic in Opium has adopted the following resolutions, submitted by the representatives of Great Britain, Belgium, Italy and Spain. No firm which has knowingly manufactured or supplied for illicit traffic drugs falling under the Geneva convention should be allowed to hold a license to manufacture or trade in these drugs. The committee also recommends that the same rule be applied to narcotics derivative of morphine or cocaine even though they do not at present fall under the Geneva convention. As there is evidence that illicit traffickers can move freely from country to country in carrying out their operations, the committee recommends that passports and visas be refused to persons so engaged or be canceled if already issued.

PARIS

(From Our Regular Correspondent)

Jan. 21, 1931

Chemotherapy in Tuberculosis

There is general agreement among tuberculosis specialists that the results of chemotherapy, if not definitive, are at least important in well chosen cases. In support of this treatment, Prof. Leon Bernard presented a paper that favors continuing the trials. The Société des médecins des hôpitaux de Paris, in a recent discussion enlarged the field and included communications on the use of other chemical substances that may reinforce or replace the use of gold salts. Messieurs Flandin, Lecocq, Maisson and Thurolon gave their opinions based on numerous therapeutic trials made not only with gold salts but also with salts of cerium and molybdenum. After pointing out how difficult it is to interpret the improvement observed in pulmonary tuberculosis, which may appear spontaneously, they said that the best criteria of the therapeutic effect are the temperature, the weight, bacilli in the sputum, and, the radiologic modifications. In using gold salts the authors prefer a fat soluble compound in the form of intramuscular injections, as it appears to expose the patient less to reactions sometimes observed after intravenous injections. The results in most cases have been satisfactory. As regards cerium, whether it is given by mouth or injected intramuscularly the authors consider that the results secured were at least equivalent, which makes it possible to alternate with the gold treatment. Molybdenum, on the basis of more recent trials, produced, it seems better results than other products hitherto employed. It dispels the bacillus from the sputum, while, at the same time, the general condition improves rapidly.

Parathyroid Extract in Arthritis Deformans

At a recent meeting of the physicians of the hôpitaux de Paris, chronic rheumatism was discussed. For several years Leopold Lévy and Henri de Rothschild have called attention to the role of the thyroid secretion in arthritis deformans, and they have introduced a form of treatment with powdered thyroid substance which has often given good results. At present, extracts of parathyroid glands are being tried, although the parathyroid glands are supposed to have an action rather antagonistic to that of the thyroid. Weissenbach, Fraunton, Perles and Seidmann have announced the results that they have secured over a period of more than a year in a dozen cases of chronic arthritis deformans in which they used parathyroid therapy subcutaneously in successive and repeated series with a dosage of from 1 to 2 cc daily. In general an immediate local and painful reaction follows the injection, which produces marked relief, a quieting of the pain symptoms and

a frank functional amelioration, which persists for several hours. The improvement appears to be more stable if a sufficient number of injections have been given. When the treatment is stopped, one often observes recurrences of the articular symptoms. In general, the final results are satisfactory. The joints become supple and the general condition improves. However, one must watch for signs of intolerance. The authors are unable to reach a definite conclusion with regard to the nature of the action of this glandular extract.

The Nature of Beriberi and of Scurvy

At a meeting of the Société de médecine et d'hygiène tropicales, discussion arose as to whether or not beriberi and scurvy are, as it commonly supposed, deficiency diseases. In the opinion of R. Dumas, beriberi is not a deficiency disease but rather a toxic infection. He reports in support of this theory several cases that he observed in the colonies. In these cases the beriberi was not due to a deficiency, for there was an abundance and variety of foods, but was plainly due to a disease of the rice grain. White rice spoils rapidly, whereas the brown rice, protected by its epicarp, is less frequently contaminated by cryptogams. As for scurvy, there is nothing to prove that it is a deficiency disease. The author, who had occasion to observe numerous cases of scurvy during a long voyage, gave several theories on the subject. Marcel Leger shares the view of Dumas on the pathogenesis of beriberi. He had observed Tonkin cases that left no doubt as to the toxic infectious nature of the disease. He had seen contagious cases in Hanoi. Mr. Libermann stated that in the Indies beriberi occurs in the regions in which the rice is milled by mechanical process. In Indo-China he never saw a case of contagion in the hospital. It is evident therefore, that the question is complex and difficult to decide. Mr. Nattan Larrier, who thinks that beriberi is contagious, referred to the cases of contagion cited by Mr. Jernselme. On the plantations of Cochinchina, where only a day's supply of rice is milled at one time no cases of beriberi are ever observed. This discussion which opens up again scientific questions hitherto regarded as settled, is somewhat perplexing for it leaves unexplained the cases in which beriberi has been reproduced experimentally in animals by a suitable defective diet and has been cured by a return to the normal diet, the same as in rickets.

BUDAPEST

(From Our Regular Correspondent)

Jan. 9, 1931

International Stomatologic Congress

The Association Stomatologique Internationale will hold its first international congress at Budapest, September 27. The last congress, which was held in Venice was a national Italian congress, but representatives of thirteen nations were present. In place of the resigning chairman, Dr. Chompret, Paris they elected professor Szabo, Budapest, and instead of Dr. Herpin, Paris, general secretary, they elected Dr. Sturm, Budapest. The congress will take place with the support of the Hungarian government and the city of Budapest. Lectures will be held by invited experts from all parts of the world. There will be also an exhibition of dental and surgical instruments. The office of the congress is in Budapest, IV, Varoshaz uccsa 14. The chief secretary is Dr. Morelli, lecturer to the University of Budapest.

Intravenous Resorcinol Treatment in Acute Polyarthritis

At the Budapest St. Stephan Hospital experiments were made with the intravenous use of resorcinol in cases of acute polyarthritis. They were encouraged by the results achieved with similar administration of resorcinol in septic cases. As reported by Dr. Stephan Roth, junior physician during the period 1927-1930 out of 258 patients suffering from polyarthritis they

selected 105 patients as suitable for intravenous treatment. The patients were rather young, and their disease was acute, with high fever, violent arthritic pains, tumescence and redness, that is, the attack was primary and not a relapse. In subacute and in chronic cases the intravenous resorcinol treatment is not indicated. The method is not contraindicated in acute cases complicated with endocarditis. Thus, of their 105 cases, 65 presented endocarditis. Resorcinol was given in every case intravenously in a dose of not less than 1 Gm dissolved in freshly distilled and sterilized water. The injection is accompanied by buzzing of the ears, fainting and accelerated breathing, which last for two or three minutes. Every patient gets, in all, from 5 to 6 Gm of resorcinol, without any harm whatever. The good effect of resorcinol may be augmented by the simultaneous oral administration of sodium salicylate. Of 105 patients, 56 have been cured, 20 improved and 29 less improved, so that in the cases of the latter category other methods of treatment had to be resorted to. In the most favorable cases the injection is followed by profuse perspiration, and the fever falls by crisis. This is succeeded by a better general feeling and a decrease of pain, and the tumescence and redness of the swollen joint abates from hour to hour. Some of the cases have been under observation more than eighteen months and as yet no relapses have occurred.

Restitution of the Family Physician

In late years, when critical economic conditions prevailed in Hungary, private practitioners complained of the ever increasing number of sickness insurance companies, which admit as members also people who can afford to pay for medical services. As a result the old family physician system, which was a boon to both families and physicians, almost entirely ceased. Physicians in trying to resuscitate this system have appealed to the medical association for the elaboration of new rules that would satisfy physicians and at the same time also the public. The board of directors of the association intends to regulate the family physician system as follows: the position of a family physician commences with the first of January and ends with December 31. If the connection is interrupted after the first of April, the whole year's salary has to be paid by the patient. The minimal price in Budapest is 100 pengó (about \$18) while outside Budapest it is 50 pengó (about \$9). In the larger towns the branches of the association have to fix the prices of the family physician, paying due attention to the minimum. If the patient moves farther than 2 kilometers from his previous dwelling (in relation to the physician's house) a new agreement should be made. Consultations with other physicians, operations, and night calls have to be paid for extra.

A Disease of Paprika Cutters

Paprika is a special Hungarian condiment, which when dried becomes red and in this state it is cut and milled, whereby it becomes a condiment. Dr F Kovacs in a paper read before the Budapest Royal Medical Society described a disease affecting paprika cutters. He often observed a peculiar disorder of the lungs the symptoms of which resembled those of tuberculosis, while a roentgenogram reveals a picture reminding one of a diffuse broncho-alveolitis. Paprika cutting consists of cutting out the ribs of the vegetable because this contains mostly capsicum and thus paprika loses its excessive smartness. It seemed probable that the disease was caused by the rising paprika powder but this is contradicted by the fact that the paprika millers did not show any such manifestations although they are grinding the strongest paprika powder. The causative agent is a mold which the cutting women constantly inhale. The disorder of the bronchi is caused by the fine spores. The disorder may involve the pleura and may cause also severe bronchiectasis. It should not be confused with tuberculosis. It is easily differentiated by microscopic examination of the sputum. The most important question is one of prophylaxis. This is not difficult because the cough occurs only if moldy paprika is

being worked up, from this, it is obvious that paprika should be worked up in a fresh state. In practice this is well nigh impossible, because this is a small industry, and most of the establishments employ fifteen or twenty women who want to keep working for the whole winter. Thus they have to store the autumn picked paprika, which gets moldy when standing in the storehouse. Dr Kovacs urged that a law be made requiring the frequent turning of the paprika in the storehouse to prevent its getting moldy.

ITALY

(From Our Regular Correspondent)

Dec 31, 1930

Meeting of Anatomical Society

The Società italiana di anatomia held its second national session in Florence, under the chairmanship of Prof Giulio Chiarugi, director of the institute of anatomy of the University of Florence.

Professor Teroni of Padua spoke on the first topic on the program, "The Newer Morphology of the Autonomic Nervous System." The speaker explained the methods that have been developed by morphologic research on the vegetative system, mentioned the physiomorphologic discoveries of Gaskell-Langley and discussed certain subjects pertaining to the development and to the structure of the sympathetic system. He referred to the opinions on the origins of the sympathetic system and concluded that, while an active migration of sympathetoblasts from the neural tube and from the neural crest is not certain, there is evidence of a directive, organizing action of the neuraxon on the development of the autonomic system. The speaker considered then the question as to whether the cells of the autonomic system have a particular appearance that distinguishes them from other central and peripheral nerve cells and discussed the character of the myelination (or the absence of myelination) of the nerve fibers as a differential criterion. Finally Teroni discussed the phylogenetic significance of the autonomic system, including the sympathetic and the parasympathetic, and pointed out the difficulty of identifying in the invertebrates a system analogous to the autonomic system of the vertebrates. He recognized, however, for all groups of the latter the existence of a preganglionic and postganglionic sympathetic and parasympathetic system and considered the autonomic system as genetically, as well as functionally, connected with preganglionic centers.

EXPERIMENTAL RESEARCH ON THE CEREBELLUM

Professor Simonelli of the University of Florence presented a paper on "Morphologic Data as a Guide in Experimental Researches on the Cerebellum." The speaker recalled the newer morphologic division of the cerebellum according to Bolk and others and raised the question as to within what limits one can recognize a distinct and separate function in the various cerebellar formations. The cerebellovestibular relations constitute a point of generic interest. Until recently there was a tendency to hold that in the cerebellum are located the centers of the labyrinthine reflexes but today on the basis of recent research of the Magnus school and the Florence school of physiology it must be accepted that while the action of the cerebellum takes place through the operation of these reflexes their centers are however doubtless located outside the cerebellum itself. As regards the functions of the various lobes of the cerebellum numerous experiments of demolition and of cortical stimulation have established rather constant facts with reference to the anterior lobe, certain zones of the posterior median lobe, the crus primum and the crus secundum. Also with reference to the other areas accurate researches are not lacking but the physiologic data that have been secured do not appear sufficiently controlled by histologic examination and do not present sufficient agreement between the phenomena of suppression and those of stimulation.

In addition to the official papers and the general discussion there were other communications. As a general conclusion, it was emphasized that the greater part of the research carried out thus far in this field is based on too few cases, considering the great importance of statistical studies on this problem. There was a possibility thrown out of carrying on systematic research simultaneously in the various provinces of Italy.

Professor Spadolini, physiologist of the University of Siena presented a communication illustrated by the projection of numerous photomicrographs on the genesis of blood platelets.

Professor Pensa of Pavia spoke on the structure of the cerebellum, taking up the discussion of certain problems of neurologic interest.

Palermo was selected as the meeting place for the next convention, and Professor Luna, director of the Institute of Anatomy of the University of Palermo was chosen president.

Congress of the International Society of Microbiology

The Italian section of the Società internazionale di microbiologia will hold its third congress in April, in Milan. The following topics will be discussed: (1) Pathogenesis of Diseases of Plants, presented by Professor Montemartini of the University of Palermo; (2) The Newer Knowledge Concerning the Biology of the Tubercle Bacillus discussed by Professor Puntieri of the University of Rome, and (3) Hypersusceptibility in Disease, with paper by Professor Zironi of the University of Milan. In addition, Professor Pepeu of the Istituto sieroterapico in Milan will present a communication entitled "Modern Views on Antidiphtheritic Vaccination."

The Medicopedagogic Convention

The second National Medicopedagogic Convention was held in Milan under the auspices of the Associazione pro infanzia anormale and the Lega (league) per l'igiene e la profilassi mentale. The purpose of the meeting was to stimulate an exchange of ideas between competent persons interested in scientific and practical problems concerning the treatment and education of children who have mental defects or defects of speech or hearing. On this occasion, a demonstration was given of the organization as completed by the municipality of Milan, in the special institutions for persons with mental defects, which have all the necessary aids for complete and rational medicopedagogic assistance. Professor Meder, in his inaugural address, described the work accomplished during the past decade, by the Child Welfare Society, which culminated in the creation of the special Zaccaria Treves school.

Professor De Sanctis, director of the Clinica neuropsichiatrica of the University of Rome, discussed the measure of success that has been secured in the rendering of medicopedagogic aid in the various forms of mental instability in children. He explained the medical and the pedagogic sides of the problem. As to the medical side, De Sanctis emphasized the great frequency with which the psychic anomalies of children are the effect of organic diseases of the brain of an inflammatory nature and particularly, of an infectious type, among which congenital syphilis plays an important part. As for the pedagogic side, the speaker considers that the environment, both physical and moral, has a great deal to do with the development of mental disease and should therefore be surveyed and, if necessary, changes made while there is time. The organic constitution before the mental disease developed should be studied as a concomitant cause, and such information is most often furnished by the environment.

A Veratti referred to the activity developed by the juvenile court of Milan during its first two years. It was only natural that a controversy developed between two opposing scientific schools: one of which approves and the other rejects the collaboration of the psychiatric expert with the magistrate. The Milan tribunal taking advantage of the discretionary powers conferred on it by law considered the opinion of the medical specialist necessary in every case.

Dr. Albertini and Professor Corberi offered a paper on the present status and the indications of medicopedagogic aid in children affected with mental anomalies. The speakers explained the provisions made for abnormal and for backward children; the law pertaining to maternity and childhood, and consisted of ambulatoriums for diagnostic observations, under the direct of medical specialists, schools in psychopathic hospital and independent schools the purpose of which is the adaptation, as far as possible, of mentally abnormal children to life, and carry out the specific prophylaxis to reduce the delinquency minors. There are in addition differential classes for backward children in the elementary public schools.

Instruction in Occupational Medicine

By a recent circular letter sent to the faculties of medicine in the universities the minister of public instruction established an official course in medicine pertaining to occupational diseases. The purpose of the instruction will be the training of experts who can then be assigned to the welfare institutes for hygienic and social protection of workmen. The faculties of medicine in addition to adding the new branch of study to its program, must advise the students to take the course.

Appointment of Director of Health Department

Dr. Gaetano Basile has been appointed director general of the department of public health. Dr. Basile was a pupil and assistant of Professor Pagliani and later, provincial physician. His services as hygienist were of great importance during an epidemic of plague that occurred in Naples in 1901, and during the cholera epidemic of 1911 in Messina. Prof. Arcangelo Ilvento was appointed assistant director general of the hygienic and sanitary services of Italy. He is at present director of the sanitary services of the Italian Red Cross Society and a specialist in the field of welfare work, social insurance and social hygiene.

The Medical Press in Italy

The question of the medical press is being discussed at present in Italy. The excessive number of medical reviews amounting to more than 300, is generally deplored. Some of the journals are merely advertising mediums of pharmaceutical houses; others are in the interest of some form of publicity, still others are personal, being written entirely by a single individual. About a hundred of the journals have real medical importance and of these about thirty are for the publication of the proceedings of academies or medical societies; ten are reviews of a general character, and about sixty are the organs of the various specialties, with an average of two or three reviews for each of the twenty or more special branches of medicine and surgery. According to some it would be well to limit the number of special reviews to one for each specialty. But the proposal does not appear feasible for the reason that there are some specialties (phthisiology, oncology) that have a large number of publications and that would not submit to such curtailment. According to others, the selection will be spontaneous, with the elimination, on the part of the public, of the reviews that present a slight interest. Others propose the organization of an association of the medical press as there is none in Italy at present, urging that such problems could be properly handled by such an association.

Statistics on Cancer

Dr. Corradini of the Clinica medica of Florence has collected statistical data on cancer from the case histories of cancer patients admitted to the clinic during the period 1901-1930. The diagnosis of cancer was made in 340 cases, and the diagnosis was confirmed in each case in which necropsy was possible. As regards sex distribution, 68.3 per cent of the patients were men and only 31.7 per cent were women. This observation is in contrast with the statistics usually given by authors, some of whom report 60 per cent of the cases in women and 40 per cent

in men. But it should be noted that the statistics of Corradini concern an institute of *Clinica medica*, to which no patients with uterine cancer are admitted, they being received at the gynecologic departments, nor any patients with mammary cancer, who are sent to the surgical departments. As to the age of the patients, the majority are mature and none were under 20. It was observed that 15.4 per cent of the patients were under 40 years of age and 84.6 per cent were above that age. The most common site was the digestive apparatus. Of 340 cases, 218 were cancer of the stomach (64 per cent) and 32 were hepatic neoplasia. Of the 218 cases of cancer of the stomach, 158 or 72.48 per cent, were in males, and 60, or 27.52 per cent, were in females. Of these patients, 84 per cent were above 40 years of age, while 37.5 per cent were under 50, and 62.5 per cent were above 50 years of age.

VIENNA

(From Our Regular Correspondent)

Jan 6, 1931

Treatment of Thrombophlebitis with Roentgen Rays

Prof. Dr. T. Halban, head of the gynecologic department of the Wiedener Hospital in Vienna, presented recently, before the Wiener Gesellschaft der Aerzte, a number of patients who had been treated by roentgen rays after his new method, as a cure for thrombophlebitis. Encouraged by the results secured in other inflammatory conditions, Halban employed roentgen rays in all cases of phlebitis occurring in his department, the whole inflamed area being treated at short intervals with weak erythema doses. Phlebitis, a painful disease which sometimes confines patients to bed for months, often changed its character abruptly. The first sign of improvement is freedom from pain, which follows the treatment almost immediately. The temperature becomes normal in from one to two days, the swelling goes down, and the inflammatory process is checked. In a number of the cases presented, a cure was effected in two days. The results secured with roentgen irradiation in the trial cases have been so satisfactory that this procedure has been employed in the department of Halban in all cases of phlebitis along with other recognized modes of treatment. As the transportation of phlebitis patients to a roentgen laboratory is dangerous, Halban recommends the use of a portable roentgen apparatus in the hospitals, in order that the irradiation may be applied at the bedside.

Radium for the New Cancer Hospital in Vienna

Under the direction of Professor Tandler, who is the head of the Vienna bureau of health, the municipality has decided to spend \$300,000 for the purchase of 5 Gm. of radium. With this purchase Vienna will have secured the same amount of this element that Stockholm possesses, and only one other city of Europe (Paris, 6 Gm.) will have more. The purchase has been under consideration for four years so as to give an opportunity of studying the plan from every angle. Professor Tandler visited the Stockholm Radium hemmet and received from Professor Forsell the director valuable advice and assistance. Two other physicians of Vienna have studied the Stockholm methods on the ground and Professor Forsell has permitted one of his assistants to come to Vienna. In order to carry out as soon as possible the treatment of cancer patients with the new supply of radium, the municipal hospital in Linz, a suburb of Vienna, has vacated a number of rooms for the 'Vienna municipal cancer institute' and in April the institute will begin its activities. The institute will be available not only for the patients of Vienna but for anybody. As Professor Tandler stated when at the last session of the municipal council of Vienna, he made his announcement, the solution of the cancer problem is one of the most urgent needs of medicine. The mortality from neoplasms has reached first place in Vienna and exceeds that of all other causes of death given in the statis-

tics. In a radium institute organized on modern lines, not only early treatment of cancerous conditions, which is so important, can be carried out, but also opportunities are offered for the prompt recognition of such conditions and for the after-treatment following cancer operations. In the present status of cancer therapy, paramount importance is attached to the after-treatment. Immediately after the establishment of the radium institute, it is planned to organize a school in which courses will be given to fit physicians for the work of a radium specialist. There are few genuine radium specialists. Heretofore, radium has been employed chiefly by the surgeons, the gynecologists and the dermatologists. For each case the optimum was left, to a great extent, to chance. Then, the quantity of radium that was available in Vienna was too small to meet the needs. Many, for want of money, were compelled to forego radium treatment. Radium therapy received its first impetus in Vienna. It is well known that the Austrian government, several years ago presented to Madame Curie the 5 Gm. of radium that is now in Paris—at which time it was not as expensive as at present. Vienna will thus soon have two cancer hospitals, one an American foundation (Child Canning's Cancer Hospital Foundation in Vienna), which has been active for the past year and a half but which does not have much radium, and the new municipal radium institute which in fact will be chiefly a cancer hospital and secondarily an institute of research and instruction.

Results of Malariotherapy in Dementia Paralytica

In the Vienna psychiatric clinic where malariotherapy as a form of treatment in dementia paralytica was inaugurated by Wagner-Jauregg, an exact series of statistics on the results of this fever therapy has been preserved and offers excellent material for the study of the problem. From this large series of cases Dr. Dittner, the first assistant of the clinic, selected 129 cases for careful study. These patients received the malarial treatment during the period 1922-1924, so that from six to eight years has since elapsed. His investigations reveal that 67 or more than 50 per cent of the patients, are still living, while the number of permanent cures is surprising. Of these 67 patients 53 are perfectly well. The original fears that the malariotherapy only delays the progress of the disease and that it would later break out anew with greater force have proved to be unfounded. One of the first patients to receive malarial treatment has been free from all symptoms for ten years. Similar results have been achieved in many patients treated since that time. The many patients in whom the progress of the disease has been checked and in whom the condition is stationary must be regarded as cured since the Wassermann test on the spinal fluid has been consistently negative. And even though the malariotherapy exerted no appreciable influence on the clinical picture it has lengthened the life of the patient. The malariotherapy is most effective in combination with arsphenamine in the form of after-treatment. The combined method gives the most permanent cures and the fewest deaths. Of thirty patients who received the combined treatment seventeen are alive after eight years while fifteen have fully recovered, eleven have died, some of them from intercurrent diseases. The results as shown by these statistics exceed the boldest expectations. The large number of permanent cures without remission over a period of from six to eight years of a disease hitherto regarded as incurable and fatal constitutes a triumphant success for malariotherapy. It will be recalled that Professor Wagner-Jauregg, the proponent of this form of treatment was awarded the Nobel prize in medicine for 1927.

Death of Professor Pregl

The death of Prof. Fritz Pregl, the Nobel prize winner in chemistry for 1923 from the effects of a pleuritis occurred recently. For years he was director of the chemical institute

in Graz, after having held a similar position in Innsbruck. Born in 1869, Pregl was the creator of the method of quantitative organic micro analysis, which makes possible complete analyses with only a few milligrams of material for examination. Pregl's new method, together with the use of the micro scale, which he constructed in collaboration with the scale manufacturer W. Kuhlmann, soon became the common possession of the scientific world and yielded unexpected good results. Pregl's method proved to be especially valuable for biologic and physiologic research, since heretofore the lack of material made their solution practically impossible. Pregl introduced also a stable solution of iodine (Pregl's solution), which is well known as a disinfecting fluid. With the passing of this eminent scholar, the world loses a scientist whose activities have exerted an enduring influence.

BERLIN

(From Our Regular Correspondent)

JAN. 12, 1931

Stricter Regulations for Prescribing Opiates

On the basis of section 5 of the opium act of Dec. 10, 1929, the federal ministry of the interior, with the approval of the federal council issued under date of Dec. 19, 1930 a decree that establishes more strict regulations pertaining to the prescribing and dispensing of opiates and cocaine. Medicines that contain these substances may be prescribed only by physicians, dentists and veterinarians and then only on medical indications. Medicines that contain more than one narcotic may not be prescribed, nor medicines that contain coca leaves or preparations of coca leaves or in ester of morphine other than heroin. There is also a prohibition against prescribing various narcotics in substance also against medicines that contain more than 15 per cent of morphine or heroin or the like.

The quantity that may be prescribed for a patient in one day is restricted. If the physician in particular cases wishes to prescribe for a patient in one day medicine that contains more than 2 Gm. of opium or opium preparations or more than 0.2 Gm. of morphine, he must enter notes on the case in a so-called morphine book, including the name, place of residence and age of the patient, and a statement as to what condition necessitates the excessive dose of morphine or opium. He must also state the day on which the prescription is made, the amount of morphine contained in the medicine, and the period for which the medicine is prescribed. Other opiates may not be prescribed at all in these large quantities.

If the medicine is intended for a narcotic addict, the physician must answer in the book a number of special questions. He must enter on the prescription, before his signature, in his handwriting, the words "prescription entered." Also the supply that the physician may secure for his office practice is limited, in other words, he must make the same entries for opium and morphine as have just been mentioned.

Medicines containing cocaine the physician may prescribe for a patient for his own use only in solution and then only in case the purpose intended cannot be attained in any other way. Here, the quantity of cocaine that can be given at one time may not exceed 0.1 Gm. daily. The physician may use medicines containing cocaine only for interventions on the eyes, the larynx, the nose, the ears, the pharynx and the jaws, and then only in case the cessation of pain cannot be accomplished in any other way (up to 1 Gm. daily). Cocaine is thus prohibited wherever it can be replaced by its substitutes. Also for every prescription of cocaine the proper entries must be made in a special book. Further regulations concern the mode of prescribing, for instance the prescription may not be dated back or ahead. The regulations pertaining to the drawing up of the prescription are detailed and precise. Prescriptions that are not made out in accordance with the regulations or that call for undue amounts of a narcotic may not be filled by the pharmacist. However, though a prescription of a physician may

not be made out correctly in every detail, it may be filled provided the bearer of the prescription convinces the pharmacist that an imperative need exists that makes necessary the immediate use of the medicine. In such a case, however, no more of the narcotic may be dispensed than the circumstances justify.

Concerning the medicines dispensed the pharmacist must keep written records which, together with the prescriptions, must be preserved for at least five years. Part of the decree goes into effect February 1 and part of it April 1.

These regulations are intended to curb the increase in the number of addicts since the war, that is, the illegitimate use of these substances. The previous legislation sought merely to provide a supervision of the traffic in substances covered by the opium law and a control of its operation. Thus, the justification for the opium law states that the addiction to a narcotic is often fostered by supplies that are procured from drug stores on the basis of a physician's prescription. Hence, the physicians, dentists and veterinarians had to be included in the group of persons to whom the opium law was immediately directed.

With these regulations, which interfere extensively with the physician's freedom of treatment the government has the means of supervising much more successfully the opium law in the interest of the public health service. At the Danzig medical convention the German medical profession took a hard-nosed attitude in keeping with the purposes of the decree in order that they might lend their support to combating addiction to narcotics. The profession, through its resolution has taken up in a vigorous manner the crusade against narcotics.

The Increase of Influenza

Toward the end of the old year, there were not many cases of influenza, now they are increasing daily. At the Berlin Allgemeine Ortskrankenkasse the number of cases reported daily up to Christmas was about fifty. December 29 the number rose to 109, the day following to 254, and on the last day of the year the 300 mark was passed. During the first days of January the incidence remained about the same. Fortunately the disease still preserves a mild course, though there have been cases with complications, particularly pneumonia, and some have been fatal. Since, at present the number of patients in the hospitals is comparatively small there is a reserve supply of beds. The municipal health bureau is making all necessary arrangements so as to be prepared in case of an epidemic of influenza, that is, as far as Berlin, under present economic conditions, is able to provide.

Institute for Research on Heart Disease

The institute for heart research established in Bad Nauheim through the generous gift of Mrs. Louise G. Kerckhoff of Los Angeles, is nearing completion and can probably be opened the coming spring. The new institute, named after the donor the "Kerckhoff-Institut," will be in charge of Professor Groedel of Bad Nauheim. There will be four departments: a department of examination and diagnosis for patients of the social insurance system, a department for the collection of statistics on the causes of heart disease, a department for public enlightenment as to the causes and the best methods of combating heart disease, and a department for experimental pathology and therapy of heart disease. An administrative council composed of federal representatives, the chairman of the bureau of insurance of Hesse, and representatives of neighboring universities and members of the medical profession will manage the institute.

The Noise in Large Cities

The crusade against the noise of large cities is entering on a new stage after a long period of quiescence (THE JOURNAL, Sept. 27, 1930 p. 949). The Verein deutscher Ingenieure is about to organize on a large scale the crusade against the noise evil. Similar to the organization in New York the work will be divided into sections. The psychologic section will deal

with research on the sources and the varying degrees of intensity of sounds, also on the intensity of tone sensations. A medical section will study the influence of the noise on the nervous system, on the performance of labor and on sleep. A legal section will test the possibility of the law and the police influencing the production of noise, and a technical section will ascertain to what extent the noise of machines and technical apparatus can be reduced and to what extent it is possible to construct machines that are practically noiseless.

Investigations on the effects of noise of various intensities on the hearing, can be made with the means at hand, but there is no method available for the measurement of the subjective sensations or for a comparison of the effects of noise on the individual person. How fruitful such investigations may be is revealed by the fact that with the same physical intensity of sound the tone may under certain circumstances, be perceived ten million times more intensely than under different circumstances.

The thorough scientific manner in which the Verein deutscher Ingenieure is attacking the problem is praiseworthy, yet the question arises whether this thoroughness will unduly delay its practical solution. For the public the sole question is that ways and means may be promptly found to check the persons who produce immoderate noise on the streets, and who are easily recognized, for example, motor cyclists who permit unnecessary gas explosions, the manipulators of auto horns, street car motormen who tear across the switches with a deafening noise and drivers of trucks loosely loaded with rails. The essential work of prevention can be accomplished without scientific research and without interfering in any way with a more scientific study of the problem. The elimination of loud noises in cities is a crying need.

The Cost of Medical Study in Germany

Der deutsche Hochschulfuhrer which is published by the students' association, estimates the approximate cost of medical study, including the cost of living, at 8,600 marks (\$2,046). This estimate allows from 190 to 220 marks for dues and tuition per semester for the five preclinical semesters and from 280 to 310 marks for the six clinical semesters. For dentistry the total costs are only 5,400 marks (\$1,285). The expenditures for the three preclinical and the four clinical semesters are the same as for medicine.

Marriages

EDWIN CROWELL HAMBLIN University Va to Miss Agnes Morton Baptist of Ivy Dec 27 1930

CHARLES P M SHIFFRY Lynchburg Va to Miss Mae Joy Burch of Richmond Dec 31 1930

DAVIS W RITTER, Winchester Va to Miss Lorraine Manger of Reading, Pa Nov 2 1930

VINCENZO E MATULLI Bayonne N J to Miss Sissy Cortese of Naples Italy Nov 15 1930

FRANCIS X KLYNICKI to Miss Halma Regina Raczyński both of Detroit January 6

SAMUEL ROSEN Savannah Ga to Miss Estelle Sawilowski in Augusta Dec 14 1930

JOHN CRABAPPLE PAIMLI Gumer Va to Miss Jane Foster of The Plains January 3

DANON A BROWN Madison Wis to Miss Joyce Ball of Stevens Point, January 3

JULIAN P PIERCE to Miss Clara Hainsworth both of Florence S C February 7

JOHN B OVERALL to Miss Elizabeth Waters both of Springfield, Ky Dec 31 1930

HAROLD B FINCH to Miss Eleanor O'Brien both of Detroit January 18

Deaths

Joseph Phineas Runyan ☉ Little Rock, Ark, Medical Department of the Tulane University of Louisiana, New Orleans, 1890, professor of clinical surgery at the University of Arkansas School of Medicine, member of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, past president and secretary of the Arkansas Medical Society, past president of the state board of health, and the school board of Little Rock, proprietor of St Luke's Hospital, aged 62, died, February 2, at Hot Springs National Park, of heart disease

Frank Donaldson Moore ☉ Chicago, College of Physicians and Surgeons, Chicago, 1899, formerly associate professor of surgery at his alma mater, member of the American College of Surgeons, vice president and on the staffs of the Garfield Park and Frances Willard hospitals and on the staff of the Mother Cabrini Memorial Hospital, aged 60, died, January 28, of heart disease

Jasper Halpenny, Harlingen, Texas, University of Manitoba Faculty of Medicine, Winnipeg, Manit. Canada, 1900, emeritus professor of surgery at his alma mater, member of the American College of Surgeons, formerly on the staffs of the Winnipeg General and the Grace hospitals, aged 61, died, Dec 19, 1930, of arteriosclerosis and pneumonia

Tecumseh Kingsley Holmes, Chatham, Ont., Canada, Long Island College Hospital Brooklyn, 1865, Medical Department of Columbia College, New York, 1866, Victoria University Medical Department, Coburg Ont., Canada, 1867, past president of the Canadian Medical Association, aged 91, died, Dec 25 1930

William Cowen, New York, Medical Department of Columbia College, New York, 1883, member of the Medical Society of the State of New York, American Otological Society and the American College of Surgeons, on the staffs of the People's and Lebanon hospitals, aged 69, died, January 26, of pneumonia

Richard Griffen Savoye, Westfield N J, New York Homeopathic Medical College and Hospital 1906, member of the Medical Society of New Jersey, president of the board of health of Westfield, aged 49, died January 19 in the Montclair (N J) Community Hospital, of acute myocarditis

Dennis David Crowley ☉ Oakland Calif, Bennett College of Eclectic Medicine and Surgery, 1879, College of Physicians and Surgeons, Chicago 1885, member of the American College of Surgeons, aged 73, died Dec 28, 1930, in the Providence Hospital, of cerebral hemorrhage

John Arthur Ruan, Beacon, Iowa, Central Medical College of St Joseph 1900, member of the Iowa State Medical Society, formerly member and president of the school board, aged 59, died January 12 in the Lutheran Hospital, Des Moines, of pneumonia following an abdominal operation

Sampson Busby Allen, Charlottesville, Va, Bellevue Hospital Medical College New York 1879, formerly on the staffs of the Manhattan Eye and Ear Hospital and the New York Eye and Ear Infirmary New York, aged 77, died, February 4, of cerebral arteriosclerosis

Joseph Addison Patton Stilwell Okla Hospital College of Medicine Louisville 1892, member of the Oklahoma State Medical Association, secretary of the Adair County Medical Society, county superintendent of public health, aged 62, died Dec 5 1930 of nephritis

Benjamin Franklin Wray Camden Ind, Indiana University School of Medicine 1911, member of the Indiana State Medical Association, served during the World War, formerly member of the state legislature, aged 47, died, February 4, of heart disease

Clifford R Spain, Arkansas City Kan, Northwestern University Medical School Chicago 1903, member of the Kansas Medical Society, on the staff of the Mercy Hospital, aged 54, died, January 11, of cardiorenal disease and hypertension

Edward Fenton Cooke ☉ Houston Texas, Fort Worth School of Medicine 1897, member of the Society of American Bacteriologists and the American Society of Clinical Pathologists, aged 55, died January 8, of chronic myocarditis

Jesse W McClure ☉ Milan Ind, Hospital College of Medicine Louisville 1898, Medical College of Indiana University 1904, formerly co-owner of Jennings County and Apple County, aged 65, died January 26, of gastric ulcer

Andrew H Starcke Kansas City, Mo., Kansas City Homeopathic Medical College 1895, member of the Associated Anesthetists of the United States and Canada, aged 56, died February 3, in the Evangelical Hospital, of intestinal obstruction and carcinoma of the colon

Siegmund Albert Reich * Jersey City, N J., College of Physicians and Surgeons Baltimore, 1902, on the staff of the New York Post Graduate Medical School and Hospital, New York aged 52, died February 5, of ungula pectoris

James Nimmo Ellis, Atlanta Ga. Medical College of Virginia, Richmond 1889 member of the Medical Association of Georgia and the American College of Surgeons aged 67, died February 11 of carcinoma of the tongue

William Edward Price, Meredithville Va., University of Virginia Department of Medicine Charlottesville 1882 member of the Medical Society of Virginia, aged 70, died suddenly January 22 of cerebral hemorrhage

Roswell C Basinger * Jackson Miss Tulane University of Louisiana School of Medicine 1923 member of the Medical Association of the State of Alabama, aged 31, died suddenly, January 31 in a local hospital

Carmillus Turner Warner * Marlboro Mass University of Vermont College of Medicine Burlington 1885 aged 66 on the staff of the Marlboro Hospital, where he died January 18 of chronic cholecystitis

Ora George Daniels * Canton Mass Harvard University Medical School Boston 1909 for twenty years senior member of the staff of the Massachusetts Hospital School, aged 53 died February 3 of pneumonia

Bernard Roger Coleman Troy N Y Albany Medical College 1920 member of the Medical Society of the State of New York aged 36 died January 14, of acute uremia acute nephritis and rheumatic fever

Oscar D Swoyer, Allentown Pa University of Pennsylvania School of Medicine Philadelphia 1878 for many years member and president of the school board in South Bethlehem aged 75 died, Dec 19 1930

Frank Salter Nicholson, St Paul Neb Trinity Medical College Toronto Ont Canada 1894 member of the Nebraska State Medical Association, aged 58 died, Dec 10 1930 of carcinoma of the stomach

Ernest Luther Bullard * Rockville, Md Rush Medical College, Chicago, 1883 member of the American Psychiatric Association, aged 71 died, January 17, in Rockingham, N C, of dilatation of the heart

William Dodge, Los Angeles, College of Physicians and Surgeons, Keokuk, Iowa, 1878 past president of the Los Angeles County Medical Society, aged 73 died, January 23 of coronary sclerosis

Walter M Dalbey, Wheeling W Va Baltimore Medical College 1902, member of the West Virginia State Medical Association, aged 56 died, January 9, in San Bernardino, Calif, of pernicious anemia

William Livingston Hartman, Pittston Pa., University of Pennsylvania School of Medicine, Philadelphia, 1866, member of the Medical Society of the State of Pennsylvania, aged 87 died, January 13

Henry D Worth, Bangor, Maine, Medical School of Maine, Portland, 1878, member of the Maine Medical Association for twelve years member of the state board of health, aged 80, died January 26

Ashton Earl Neely * Surg Lieut Commander, U S Navy, Philadelphia Hahnemann Medical College and Hospital of Philadelphia 1915 aged 41, died January 28, in the U S Naval Hospital

Arthur L Fanning, Providence, R I College of Physicians and Surgeons Boston 1907 formerly on the staff of St Joseph's Hospital aged 54 died, January 11, of pulmonary tuberculosis

John W Donges Camden N J University of Pennsylvania School of Medicine Philadelphia 1866 member of the Medical Society of New Jersey aged 86 died February 5, in Miami Fla

Richard Ridgley Lytle New York University of Virginia Department of Medicine Charlottesville 1877 aged 78, died January 31, in St Luke's Hospital, of carcinoma of the small intestine

Canning T Bell De Kalb Miss Memphis (Tenn) Hospital Medical College 1901, member of the Mississippi State Medical Association, aged 52 died, January 26, of heart disease

Lincoln Arden Wheelock * East Cleveland Ohio, Medical Department of Western Reserve University, Cleveland, 1900 aged 65, died, January 24, in Brooksville, Fla, of angina pectoris

Corydon De Kalb Bundy, Kankakee, Ill., College of Physicians and Surgeons Chicago, 1902, aged 58, died, January 12, in Newport Ritchey, Fla, of myocarditis and hypertension

Charles Ives Pegues, Safford Ala., Medical Department of the Tulane University of Louisiana, New Orleans 1893, aged 70, died, January 12, at Dunedin, Fla, of bronchopneumonia

Lawrence George Distler * Middletown N Y, University and Bellevue Hospital Medical College 1899 medical inspector of the public schools, aged 54, died suddenly, January 7

Arthur Lauer, Brooklyn University and Bellevue Hospital Medical College 1911, member of the Medical Society of the State of New York aged 41 died February 3, of pneumonia

Alexander Cromwell Mavety Toronto, Ont., Canada, Queen's University Faculty of Medicine, Kingston, Ont., 1889, aged 78 died Nov 4 1930, in St Joseph's Hospital

Julius Evan Lewis, Washington, D C George Washington University Medical School Washington 1928, aged 31, died Dec 1 1930 while at sea of heart disease

William M Garretson * Anderson Ind Medical College of Indiana 1882 aged 70 died January 27, in a hospital at Indianapolis of cerebral hemorrhage

George Balmer, Toronto, Ont Canada University of Toronto Faculty of Medicine 1898 aged 61, died, Nov 23, 1930 in the Toronto General Hospital

William Jeffries Newbill, Irvington Va University of Maryland School of Medicine, Baltimore, 1868 Confederate veteran aged 84 died Dec 15, 1930

Alfred Gaither, Cincinnati Miami Medical College Cincinnati 1897 aged 67 died January 29, of chronic myocarditis, interstitial nephritis and bronchitis

Frederick W Pulford Detroit McGill University Faculty of Medicine, Montreal Que Canada, 1880 aged 72, died, January 15 in Sandwich Ont

George Winter Whitney New York New York Homeopathic Medical College and Hospital, 1903, aged 51, died, Dec 29 1930 of arteriosclerosis

Charles W Noss * Altoona Pa College of Physicians and Surgeons Baltimore 1907, aged 49, died, Oct 26, 1930 of carcinoma of the colon

Davis Ankeny Dean Pittsburgh, Western Pennsylvania Medical College Pittsburgh, 1891, aged 63, died, January 27, of cerebral hemorrhage

Tillis Gandy * Royce, Miss (licensed Mississippi 1911) aged 45 died January 31 in the Methodist Hospital, Hattiesburg of pneumonia

Willis J Peak, Oakland, Ill St Louis Medical College, 1861 Civil War veteran aged 93 died, January 17, of chronic interstitial nephritis

Charles Eugene Swift * Elkins Ark (licensed, Arkansas 1903) aged 56 died, January 10 of injuries received in an automobile accident

Henry L Older * Morenci Mich Michigan College of Medicine and Surgery, Detroit, 1895 aged 62, died, January 30, of heart disease

Theodore Griffin, Kansas City Kan Cleveland Medical College 1868 Civil War veteran aged 88, died, January 5, of myocarditis

Alson Emery Ingersoll, Fresno, Calif Hahnemann Medical College and Hospital, Chicago, 1871, aged 82, died, Nov 15 1930

Barton S Sheffer, St Joe Ind Cleveland Medical College 1877 aged 83 died January 5 of cerebral hemorrhage

John Charles Drexler, Brandon Minn (licensed, under the Act of 1887) aged 79, died January 22 of arteriosclerosis

John W Mott Los Angeles Rush Medical College Chicago, 1883, aged 88, died, January 23 of chronic nephritis

Charles Robert Oglesby, Bartow Fla, St Louis Medical College 1876 aged 79 died January 16 of heart disease

John William Schmidt Brookview Md (licensed, Maryland, year unknown), aged 82 died, in October, 1930

Bureau of Investigation

MORE MISBRANDED NOSTRUMS

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

Walkers Old Indian Fever Tonic—Bostwick Bros., Atlanta, Ga., shipped in June 1929, into Florida a quantity of Walkers Old Indian Fever Tonic that was declared misbranded. Analysis showed the product to consist essentially of epsom salt, quinine sulphate, a small amount of arsenic, alcohol and water, colored with a pink dye and flavored with oil of cinnamon and other aromatics. The claims that it was a remedy for malarial fever, intermittent fever, typhoid fever, influenza, jaundice, measles, etc. were declared false and fraudulent, and in September, 1929 judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed—[*Notice of Judgment 16939, issued September, 1930*]

Zunical—Antonio A. Zuniga of New York City shipped in February, 1929, into California more than a hundred bottles of Zunical, which were declared adulterated and misbranded. Analysis showed the product to consist essentially of eggs, creosote, copra, sugar and water. The product was declared adulterated because of the claim on the package that the preparation was antiseptic, when it was not the curative claims, to the effect that it was a remedy for asthma, bronchitis, influenza, whooping cough, etc., were declared false and fraudulent. In August, 1929 judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed—[*Notice of Judgment 16942 issued September, 1930*]

C C T Antiasthmatic (Hare)—The Shores-Mueller Company, Cedar Rapids Iowa, shipped in July, 1929 a quantity of C C T Antiasthmatic (Hare) that was declared misbranded. The charge was based first on the fact that while the tablets were claimed to contain 2 grains of potassium iodide, they actually contained less than half a grain, and while they were labeled as containing 2 grains of sodium bromide they actually only contained a little over half a grain. The therapeutic claims, to the effect that it was a remedy for asthma, were declared false and fraudulent. In December 1929 judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed—[*Notice of Judgment 17074, issued November, 1930*]

Rice's Cough Syrup—The Rice Chemical Company, Greensboro, N. C. shipped in January 1929 into Virginia a quantity of Rice's Cough Syrup that was declared misbranded. Analysis showed the product to consist essentially of extracts of plant drugs, including white pine wild cherry, sassafras and bloodroot, in a mixture of alcohol, glycerin, sugar and water. The claims that the preparation was a remedy for coughs, croup, influenza, whooping cough, etc. were declared false and fraudulent and in September 1929 judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed—[*Notice of Judgment 16949 issued September, 1930*]

Oxidine—W. S. Kirby, Dallas Texas shipped in June and July, 1929 a quantity of Oxidine and Tasteless Oxidine that was declared misbranded. On analysis Oxidine was found to consist essentially of quinine sulphate (about 2 1/2 grains to the ounce), cinchonine sulphate (about 2 1/2 grains to the ounce), extracts of a laxative plant drug, glycerin, sugar, alcohol and water. The so called Tasteless Oxidine was reported to consist essentially of cinchonidine sulphate, oil of peppermint, sugar, alcohol and water. It was fully and fraudulently represented as a food digester, a liver and kidney medicine, a remedy for influenza and various other conditions. In December 1929 judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed—[*Notice of Judgment 17077 issued November 1930*]

Glykeron—Iglesias and Company, New York shipped in April, 1929, to San Juan Porto Rico, a quantity of Glykeron that was declared misbranded. Analysis showed the product to consist essentially of codine phosphate, an ammonium salt, extracts of plant drugs, glycerin, alcohol, sugar and water. The claim that it was a remedy for coughs, bronchitis, pneumonia, whooping cough, asthma, etc., was declared false and fraudulent, and in February, 1930, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed—[*Notice of Judgment 17078, issued December, 1930*]

Vicine—The Vicine Products Company, Memphis, Tenn., shipped in July, 1929, a quantity of Vicine that was declared misbranded. Analysis showed the product to consist essentially of iron sulphate, small amounts of phosphates, calcium salts and sulphuric acid in water. It was labeled as a 'powerful germicide,' when, as a matter of fact, bacteriological examination showed that it was not germicidal. The curative claims, to the effect that it was a remedy for rheumatism, neuritis, bedwetting, sluggish liver, intestinal trouble, cramps, ptomaine poisoning, pimples, halitosis, and dandruff, were declared false and fraudulent and in December, 1929, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed—[*Notice of Judgment 17077, issued December 1930*]

Neo-Syn—The Neo-Syn Company of Minneapolis shipped in December, 1928, into Wisconsin 360 boxes of Neo-Syn which were declared misbranded. Analysis showed the product to contain acetphenetidin (phenacetine), aspirin, caffeine and starch. The claim that Neo Syn was absolutely safe was declared false and misleading, furthermore, the declaration of the presence of acetphenetidin was in inconspicuous type and did not include a statement to the effect that acetphenetidin is a derivative of acetanilid. The curative claims that the preparation was a remedy for neuralgia, influenza, headache, periodic pains, etc., were declared false and fraudulent, and in June 1929, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed—[*Notice of Judgment 16945, issued September, 1930*]

Bradfield's Female Regulator—The Bradfield Regulator Company, Atlanta, Ga. shipped in June 1929 a quantity of J. Bradfield's Female Regulator, which was declared misbranded. Analysis showed the product to consist essentially of extracts of plant drugs, including a laxative, glycerin, alcohol and water. The claims that it was a remedy for irregularities of the menstrual function and for the treatment of nonsurgical cases of weaknesses and disorders of the female generative organs were declared false and fraudulent and in January, 1930, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed—[*Notice of Judgment 17073, issued November 1930*]

Tanna-Menthol—The Tanna Menthol Company, Inc. Enid, Okla. shipped in December 1929 a quantity of Tanna-Menthol that was declared misbranded. Analysis showed the product to consist essentially of potassium iodide, menthol, iodine, tannic acid, glycerin, alcohol and water. The claim that it was a remedy for influenza, sore throat, pyorrhea, etc., was declared false and fraudulent and in February 1930 the court declared the product misbranded and ordered it released to the Tanna Menthol Company, Inc. on the execution of a bond conditioned in part that it be relabeled truthfully and that the company pay the costs—[*Notice of Judgment 17055 issued December, 1930*]

Inhalet—The Iole Manufacturing Company, Middleboro, Mass. shipped in December 1929 into New York a quantity of Inhalet that was declared misbranded. Analysis showed the article to consist essentially of menthol. The claims that the preparation was a remedy for neuralgia, catarrh, influenza, hay fever, asthma, etc. were declared false and fraudulent and in January 1930 judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed—[*Notice of Judgment 16948 issued September 1930*]

Correspondence

PERINEAL OR "COCCYGEAL" HERNIA

To the Editor —In THE JOURNAL Nov 22, 1930, page 1588, G A Pagenstecher reports a case of "coccygeal" hernia. The anatomic boundaries he gives this hernia are those of posterior perineal hernia.

He also states that 'no case of coccygeal hernia is on record in the present literature.' This statement is incorrect, and if allowed to stand may lead bibliographers into serious error. Though rare there are several cases of posterior perineal hernia recorded in the literature, probably the earliest being Pagen's case described in a letter to Haller in 1750 (Haller *Disputationes chirurgicae selectae* Laussanne 3 313 316 1755). Scarpa described the anatomy of posterior perineal hernia in his monograph *Sull' ernia del perineo* Pavia, 1821.

In 1924 I collected a number of these cases from the literature and made a special study of the anatomy of posterior perineal hernia all of which is described and fully illustrated in my book on Hernia pages 486-498. Piersol's Anatomy gives a brief description of this hernia.

It is unfortunate that this rare and interesting case of posterior perineal hernia should have been reported as a coccygeal hernia.

LEIGH F WATSON M.D. Los Angeles

"PLASTIC REPAIR OF INGUINAL HERNIA"

To the Editor —THE JOURNAL for Nov 15, 1930 contains an article by Joseph A Pettit M.D., Portland, Ore. in which the author states: 'About the time this technique was brought out Skillern presented a plastic flap technique lacking in the essential advantages presented by mine. And on the next page Pettit writes further: I find three distinct disadvantages in the Skillern operation in which the lower or lateral flap is plicated beneath the upper or medial flap: (1) It is not possible to make so extensive a plication, (2) it is not possible to construct a new fascial canal for the structures of the cord without producing an additional curve having a sharp and disadvantageous angulation and (3) the general reconstruction is anatomically incorrect.'

The article describing the operation referred to was published in 1922 (Skillern, P. G. *The Choice of Operation in Inguinal Hernia, Surg Gynec Obst* 34 230 [Feb] 1922) and is quoted by Dr Seward Erdman in the chapter on hernia in Nelson's *Living Surgery* 4 589).

Pettit's article is a discussion of the well known essentials of hernia technique, and his method is a combination of the Bassini and Andrews methods.

In my own article, Tom Jones's illustrations and the legends beneath them (especially figures 2, 3 and 5) show clearly the distinguishing feature of the operation, namely, the approximation and suture of a stout cylinder of aponeurosis-covered musculature (i.e., the rectus edge ensheathed in its fascial coverings) to Gimbernat's and Poupart's ligament. There is now established the strongest possible barrier against recurrence —far stronger than the usually thin and weak conjoined tendon used in the Bassini method. Now, with this as the fundamental barrier, the flaps of external oblique aponeurosis are utilized to take up the strain on the sutures that hold the rectus mass in the concavity of Poupart's ligament rather than of themselves to form a barrier by imbrication, as in the Andrews method, which Pettit uses. Thus, then is my answer to Pettit's first criticism: by plicating the lower flap first I get a firmer grip on the rectus mass to hold it down in place: this is my aim, regardless of the extent of the plication.

As to Pettit's second criticism which concerns the formation of a new fascial canal for the cord my answer is that I don't

form a new fascial canal contrary to his statement, and as to himself practices Skillern, as well as Erdman supports me; thus that the cord interposed between the flaps prevents their agglutination, adding 'Nor is it necessary to cover the cord which, experience has shown, causes absolutely no symptoms when placed in the subcutaneous position.'

As to Pettit's final criticism that the general reconstruction is anatomically incorrect, my answer is, first that I am unaware of any postulates having been laid down the fulfillment of which constitutes an anatomically correct operation for hernia. Secondly, is it possible for a hernia operation to be anatomically correct? And, finally, should an operation that is successful in preventing recurrence of hernia be discarded, even though it is anatomically incorrect?

In my article close study of Tom Jones's illustrations and the legends beneath them will give a clear conception of the technique. I suggest that if the author reviews my operation from this standpoint he will no longer find it, as he writes, lacking in the essential advantages presented by mine.

P. G. SKILLERN, M.D., South Bend, Ind.

THE GRAVES SYNDROME

To the Editor —Your editorial on the Graves syndrome in the issue of Dec 27, 1930 and its criticism by Percy Fridenberg January 31 page 376 merit further comment. Fridenberg asserts that the psychic factor "is certainly not of prime importance and probably not essential to the development of the disease. The emotional symptoms are possibly a result, not a cause of the disease."

The average clinician must heartily agree with the implications in your editorial and with the views of Eli Moschowitz (*The Nature of Graves' Disease Arch Int Med* 46 610 [Oct] 1930) A. S. Warthin (*The Constitutional Entity of Exophthalmic Goiter and So-Called Toxic Adenoma Ann Int Med* 2 553 [Dec] 1928) and others in the opinion that exophthalmic goiter whatever its ultimate cause is a constitutional disorder in which the psyche is of major etiologic importance. Life is too limited to comprehend the ultimate cause of any phenomenon, hence in the investigation of cause we must content ourselves with the limitations of the humanly tangible.

In a paper of ten years ago (*The Psychic Factor in Exophthalmic Goiter, THE JOURNAL*, July 23 1921, p 282) I urged that this syndrome is not goiter and that the sooner this condition is removed from the classification of goiter the sooner will a rationalization of therapeutics be effected. Eight years ago (*The Prevention of Exophthalmic Goiter, Endocrinology* 7 415 [May] 1923) I pointed out that hereditary influences play an important part in susceptibility; that this predisposition may become intensified by factors acquired through errors in the conduct of life or through maladaptation to the world at large; and that in nearly every case of exophthalmic goiter there was superimposed on predisposition an exciting factor usually in the nature of psychic trauma to account for the onset of the syndrome. The following earmarks of susceptibility may be discerned in predisposed individuals: (1) heightened cerebration, asserting itself chiefly in mental alertness and often an aptitude for singular accomplishment; (2) emotional instability expressing itself particularly in deficient inhibition, calm and poise; (3) an excitable heart and labile pulse; (4) vasomotor activity; (5) sparkling eyes which during conversation and active attention may suggest exophthalmos; and (6) undue palpability of the thyroid gland. The most noteworthy characteristic of this class of humanity is a lowered threshold of emotional reaction. In a more recent paper based on a study of 3,343 cases of exophthalmic goiter personally followed up for years (*Psychic Trauma in Pathogenesis of Exophthalmic Goiter Endocrinology* 11 106 [March-April] 1927) I found that at least 2,842 or 85 per cent presented a clear history of psychic

trauma is the exciting cause of the disease. It would therefore appear that the psychic factor plays a major role in the evolution of the Graves syndrome and that this approaches its etiology more closely than any other factor.

ISRAEL BRAM, M.D., Philadelphia

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted on request.

OCCURRENCE OF EPIDEMIC INFLUENZA IN CYCLES

To the Editor—What are the indications for influenza epidemics this winter? I have read that the disease occurs epidemically in cycles and can usually be predicted in advance. Please omit name.

M.D. Missouri

ANSWER—It would probably be more accurate to say that influenza occurs in 'waves' rather than in cycles. The word 'cycle' is a more specific term than waves and refers to waves that occur in approximately equal intervals of time. Some writers have argued that influenza occurs in a rather short cycle and that when the period for an epidemic falls in the warm weather no epidemic occurs. They thus account for the unequal intervals that occur between epidemics of influenza. The assumption of any length cycle in epidemics of influenza comes far from describing the actual intervals that have occurred between epidemics in past years. Since the pandemic of 1918-1919, which had its major peak in October, there have occurred six fairly definite epidemics that were more or less national in extent. Three of these epidemics had their peaks in February, one in January, one in March and one in May. The years were 1920-1922, 1923, 1926, 1928 and 1929. It will be seen that the times that epidemics have occurred vary both in intervals between the epidemics and in the months in which the epidemic occurs. In view of these facts, it does not seem possible with our present knowledge, to make any prediction as to whether or not an epidemic might be expected in the near future.

Going back to former years, there was a series of epidemics in the decade following 1890 and extending into the first year or two of the next decade. After these epidemics were over there was little indication of excess mortality from influenza for a period of nearly fifteen years, when the epidemics that occurred in the two or three years prior to 1918 began. If the story should be repeated in a similar fashion, we may be beginning on a period when few epidemics will occur, or we may be due for further epidemics in the near future. There seems no basis for telling which will be true, nor, in fact, is there any basis for assuming that the story of the last decade of the last century will be repeated at this time.

STATUS OF VITAGLASS

To the Editor—Kindly inform me as to the present status of Vitaglass. Please omit name.

M.D. New York

ANSWER—Vitaglass is the trade name for one of many patented ultraviolet transmitting mediums that pass ultraviolet radiations more or less freely. Some mediums transmit the radiations better than others. Pure colorless quartz for example is an excellent transmitter of ultraviolet radiation with an efficiency of 92 per cent or more in the therapeutic zone. Common window glass does not transmit ultraviolet radiation in this region.

The therapeutic zone is recognized by authorities as that small band of radiation in the vast electromagnetic spectrum having wavelengths from 2800 to 3100 angstrom units approximately. Authoritative evidence shows that these wavelengths are recognized as effective in preventing rickets and in the activation of ergosterol. This ultraviolet energy is present in sunlight and that reaching the earth in the summer is more abundant than that in the winter.

The Bureau of Standards Research Paper 113 records that vitaglass of thickness 2.5 mm has at a wavelength of 3020 angstrom units an average transmitting efficiency of nearly 25 per cent. More recent tests by the Bureau of Standards (Department of Commerce Bureau of Standards report on solarization of vitaglass letter filed with Council on Physical

Therapy, Sept. 20, 1930) place the transmission efficiency of vitaglass of thickness 2.3 mm after solarization, at 42 per cent. Furthermore, recent tests conducted by the Massachusetts Institute of Technology (Stockbarger, D. C., and Johnson, L. B. Stabilization of Special Ultraviolet Transmitting Glasses Commercially on the Markets, *J. Franklin Inst.* 210:455 [Oct.] 1930) indicated that samples solarized in the same manner had a transmission efficiency as high as 47 per cent at 3,025 angstrom units. The improvement in the manufacture of the product may account for the wide discrepancies in these results, however, the product varies widely from batch to batch.

A recent medical note published in the *Scientific American* (Coblentz, W. W. Ultraviolet Transmitting Glasses, *Abstr. Scient. Am.* December 1930 p. 467) suggested 30 per cent or higher as the minimum efficiency of ultraviolet transmitting mediums at 3,020 angstrom units. Therefore, the purchaser of vitaglass should protect himself by contracting with the dealer to furnish glass whose transmission shall after stabilization of exposure not fall below the efficiency stated.

In a recent test completed by the Detroit department of health (City of Detroit, Department of Health *Weekly Health Review* Oct. 25, 1930) twenty-seven children between the ages of 11 and 14 attended classes in a schoolroom glazed with vitaglass while thirty-six children of the same age studied in rooms glazed with ordinary window glass. The group's score in the vitaglass room was 82.1 whereas the average score of the children in the room glazed with ordinary glass proved to be 82.6. From this investigation it appears that the window glass group had a little of the advantage. If a greater number of children had been examined, however, it is probable that the values would have been nearly the same. In other words there was no indication that children attending rooms glazed with vitaglass were perceptibly improved over those children who attended rooms glazed with ordinary glass.

POMPHOLYX OR RINGWORM DERMATITIS

To the Editor—Is pompholyx contagious? Kindly outline a course of treatment.

M.D. Indiana

ANSWER—A few of the vesicular eruptions on the soles may be due to other causes but authorities agree that most cases formerly called pompholyx are cases of vesicular ringworm dermatitis. They are therefore infectious to a moderate degree. No single plan of treatment will succeed in all cases. Perhaps the best course for the vesicular and bullous cases is to open the larger lesions and apply cool wet dressings of liquor aluminii acetatis diluted with 15 parts of distilled water or saturated boric acid solution. Or the parts may be painted daily with a strong solution (from 0.5 to 1 per cent) of potassium permanganate. Evidence of complicating pus infection (ascending lymphangitis) should be watched for as these vesicular cases afford an excellent atrium for such infections. As the case improves, Whitfield's ointment (6 per cent of salicylic acid and 12 per cent of benzoic acid in petrolatum) or ointment of rosin water may be used in place of the wet dressing or the paint.

Many other methods of treatment are used: tincture of iodine from 3 to 10 per cent ointment of uniodinated mercury (iodine and mercury preparations should not be used at the same time for fear of dermatitis) mercurochrome 220 soluble solution from 2 to 5 per cent x-ray exposures from $\frac{1}{8}$ to $\frac{1}{4}$ erythema dose once a week (irritating drugs should not be used at the same time for fear of dermatitis) chrysarobin ointment from 2 to 5 per cent and many others. The plan mentioned is however the one most often successful to avoid recurrence treatment should be kept up in diminishing intensity for some time after apparent recovery.

PSYLLIUM—PARAPSYLLIA

To the Editor—I note that one of the pharmaceutical houses in the Central West advertises a solution of psyllium seed and petrolatum under the name of Para Psyllia. The formula given is as follows: Liquid petrolatum heavy 80 per cent psyllium seed jelly to make 100 per cent. Does the psyllium jelly have any therapeutic effect?

C. Indiana

ANSWER—The psyllium in this preparation is used simply as an emulsifying agent. It has no more effect on the therapeutic value of this preparation than has the agar in the agar liquid petrolatum emulsions.

In the case of the former the manufacturer informed the A. M. A. Chemical Laboratory that the actual amount of psyllium seed represented in Para Psyllia was less than 1 per cent. In the case of agar liquid petrolatum emulsions analyzed

by the laboratory a few years ago, the average amount of agar found was also less than 1 per cent. In other words these preparations are dosage forms of liquid petrolatum having the advantage of being in the form of emulsions, which are better liked by some than the liquid petrolatum alone.

Pura Psylla has not been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Nonofficial Remedies. The name is not informing of the active ingredient.

STUDY OF POSTPOLIOMYELITIC COMPLICATIONS

To the Editor—In 1887 a woman had an attack of anterior poliomyelitis. She was then 19 years of age. The paralysis affected the lower part of the spine and both legs. There has been a persistent weakness in these muscles with considerable brachice at times almost incapacitating, the patient. Recently there was a severe twinge of pain which seemed to result in a partial paralysis which was only temporary. Her physician diagnosed a stroke. It is my guess that she suffered a subluxation or twist of the weakened spinal column resulting in a temporary inflammatory condition of the cord. Whatever the condition was it has cleared up. There still remains the old postpoliomyelitic weakness of the muscles. Have you any suggestions to offer as to the type of treatment suitable in such a case? Is electricity in any form likely to prove beneficial in a case of forty three years standing?

CHARLES T. SHARPE, M.D., New York

ANSWER—In view of the fact that incomplete data have been given some of the statements in this answer may be irrelevant. If both legs and the lower part of the spine are affected it is evident that a spine brace and two long leg braces should be of value. The spine brace should be of a type known as a corset spine brace, which consists of uprights and pelvic band and crutches for under the arms. The material is canvas with linings in the front or side. The leg braces should have lock joints at the knees and limited joints at the ankles. They may have calipers and they may have a molded foot plate. Massage should be of value. Underwater gymnastics are valuable. Lowman described them in *THE JOURNAL* March 22, 1930 page 845. Muscle training, that is reeducation of weakened muscles is of value. The patient has probably had some of these physical agents. Electricity is of definite value as a muscle tonic in that it maintains the circulation at a high level. Roentgenographic examination should be made of the projections centered over the fifth lumbar vertebra for evidence of spondylolisthesis; that is, a forward slipping of the fifth lumbar on the sacrum. Roentgenograms should also be made of the hips for evidence of partial or complete dislocation.

EFFECTS OF CHLORAL HYDRATE ON CONJUNCTIVA

To the Editor—Some time ago I read in one of the standard authors either H. C. Woods Jr., Bastedo or Cushing on *Materia Medica* that chloral hydrate when used for several days often caused severe pain in the eyes or eyeballs but I have never been able since to locate exactly where I found this information. I have noted its occurrence frequently with patients and I want to confirm this information so I can convince several physicians on the subject. Could you give me this information authoritatively and state where it can be found?

I. F. YOUNG, M.D., Covington, Ind.

ANSWER—Irritation of the conjunctiva is one of the most frequent untoward symptoms of chloral hydrate showing itself in redness and swelling of the conjunctiva, which, however, disappears shortly after the discontinuance of the drug (Lewin, Lewis, *Untoward Effects of Drugs*, Detroit, George S. Davis, 1883, p. 161). Thus, perhaps, accounts for the symptoms observed.

BILATERAL SCIATIC PARALYSIS AFTER CHILDBIRTH

To the Editor—A woman aged about 31 in her second and last labor occurring five years ago suddenly noticed a complete paralysis of both lower limbs. Instruments were used effecting an immediate delivery but the paralysis persisted. I saw her about a month later at which time she had begun to improve. Improvement was gradual but complete after about eighteen months. Now because of the death of the older child she desires to become pregnant and has asked me if there will be any likelihood of the condition recurring during a pregnancy or labor. Her pelvic measurements are normal or possibly a little contracted.

M.D. Iowa

ANSWER—This case is most likely one of bilateral obstetric sciatic paralysis. Only a small number of such cases have been reported in the literature. The cause in nearly all of the reported cases was increased intrapelvic pressure producing trauma to the sciatic nerves. This increased pressure is due to one or more of the following factors: disproportion between the size of the mother's pelvis and the child's head; prolonged

or difficult labor, and instrumental delivery. The symptoms generally appear immediately after delivery but are frequently delayed for a number of days. Both legs are involved and there are both motor and sensory changes. The prognosis is doubtful in most cases. In some instances there is rapid improvement, whereas in others a permanent drop foot remains as a residue. Since the patient referred to made a complete recovery, there is no reason why she should not become pregnant again. The most certain way to eliminate the danger of a recurrence of the paralysis is to perform a cesarean section term but before labor has begun. There is, however, a report of a permanent paralysis which occurred during the sixth month of pregnancy. Since in the present case the paralysis occurred before delivery was accomplished, it would most likely be advisable to deliver the child by the abdominal route at term. An excellent article on this subject is by Samuel Kleinberg in *Surgery, Gynecology and Obstetrics* 45:61 (July) 1927.

ALKALOID IN SUSPENSION RATHER THAN SOLUTION

To the Editor—In Marriott's recent work on "Infant Nutrition," under the subject of rhinopharyngitis the following prescription is given:

Ephedrine (alkaloid)	Gm. or Cc.
Neosolol	0.5
Aqueous dest. q. s.	15
	ad 30.0

As it is my understanding that the alkaloid is insoluble in water, would you kindly advise me how a solution is brought about?

ANGUS B. COWAN, M.D., Fresno, Calif.

ANSWER—In this case the alkaloid is intended to be in suspension, the neosolol favoring this by the gelatin it contains. It is doubtful whether this is a good form in which to prescribe ephedrine, unless used within a short time after preparation. Ephedrine, according to the recent work of Drs. Moore and Moore of Indianapolis, decomposes in presence of moisture and light. Solutions of ephedrine sulphate or ephedrine hydrochloride, however, are apparently stable.

USE OF SUPRARENAL CORTEX

To the Editor—In a case of asthenia with weakness, nervousness and cardiac arrhythmia would the administration of suprarenal cortex be indicated? In what form it is best employed? Would the prolonged use of a salt free diet tend to aggravate the symptoms? Please omit name.

M.D., New York

ANSWER—It is difficult to give a definite answer. Koehler's extract, which has been supplied through the courtesy of the University of Chicago, occasionally has had effect in patients with weakness and nervousness. So far as we know, it has never had any effect in cardiac arrhythmia. The cortical hormone of Swingle and Pfaffner is reported to be specific in its effect and there is no evidence that it would have any effect on this clinical syndrome unless it was associated with Addison's disease or possibly some other endocrine disease. With this combination of symptoms, it might be well to investigate whether there is any evidence of hyperthyroidism. It is extremely unlikely that a salt-free diet could be a factor, unless it interfered with the patient's appetite.

POSSIBLE DIAGNOSIS OF ANEURYSM

To the Editor—A man aged 23, whose work is rapid and strenuous putting in meters has had dyspnea and cough regularly at 4 a. m. for the last four months lasting for half an hour or until considerable expectation takes place. There is some cough during the day which is worse in damp weather. Night sweats exist but no chills or loss of weight. There is no anorexia. His weight is 148 pounds (67 Kg.). He is very tired at the end of a day's work and nervous. Physical examination shows that the lungs are clear, the heart rate is 120 with no enlargement. A systolic thrill is heard at the base of the heart. Blood pressure is 140 systolic and 80 diastolic. Double murmur is heard at the aortic valve and a systolic murmur at the pulmonary area on exercise. The murmurs are loudly transmitted to the carotid arteries. No increased retromammary dullness was found. A fine tremor of the tongue and fingers was observed. The reflexes were hyperactive, the pupils reactant. One blood Wassermann reaction was plus minus. Because two company doctors said he was all right he was not studied again. With this insufficient data can aneurysm give such an interesting chief complaint? If not what? Please omit name.

M.D., New York

ANSWER—From the meager facts given it is difficult to make a correct diagnosis. There are two possibilities. 1. That the patient is suffering from the effects of aortic regurgitation and that his apparent myocardial weakness in the early morning is a manifestation of his lack of reserve in the myocardium. 2. In

spite of the fact that he has lost no weight, hyperthyroidism should be seriously considered. Aneurysm cannot be seriously considered without more data than have been given. A roentgenogram of the chest should also be made and several metabolism studies should be undertaken. In addition the patient should be put to bed for at least a week to see what effect the rest has on his pulse rate.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALASKA Juneau March 3 1931 Sec Dr Harry C De Vigne, Juneau Alaska

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Written examination in nineteen cities in the United States and Canada March 14 1931 Sec Dr Paul Titus 1015 Highland Bldg Pittsburgh Pa

AMERICAN BOARD FOR OPHTHALMIC EXAMINATIONS Philadelphia June 8 1931 Sec Dr William H Wilder 122 S Michigan Ave Chicago Ill

CALIFORNIA Reciprocity San Francisco and Los Angeles March 18 1931 Sec Dr C B Pinkham 420 State Office Bldg Sacramento Calif

CONNECTICUT Homeopathic New Haven March 10 1931 Sec Dr E C M Hall 82 Grand Ave New Haven Conn

MAINE Portland March 10 11 1931 Sec Dr Adam P Leighton Jr 192 State St Portland Maine

MONTANA Helena April 7, 1931 Sec Dr S A Cooney Power Block Helena Mont

NEW HAMPSHIRE Concord March 12 13 1931 Sec Dr Charles Duncan Concord N H

NEW MEXICO Santa Fe April 13 14 1931 Sec Dr W T Joyner 2021 First National Bank Bldg Roswell N M

OKLAHOMA Oklahoma City March 10 11 1931 Sec Dr J M Byrum Shawnee Okla

Puerto Rico San Juan March 3 1931 Sec Dr Diego Biascoechea Box 804 San Juan P R

WISCONSIN Madison March 21 1931 Basic Science Sec Prof R N Bauer 3414 W Wisconsin Ave Milwaukee Wis

April 14 1931 Reciprocity Applications Sec Dr R E Flynn 315 State Bank Bldg, La Crosse Wis

Rhode Island October Examination

Dr Lester A Round, director of the State Public Health Commission of Rhode Island reports the written and practical examination held at Providence, Oct 2-3, 1930. The examination covered 7 subjects and included 70 questions. An average of 80 per cent was required to pass. Sixteen candidates were examined and passed. The following colleges were represented:

College	PASSED	Year Grad	Per Cent
University of Colorado School of Medicine	(1927)	85.4	
Rush Medical College	(1930)	85	
Boston University School of Medicine	(1930)	83.2	
Harvard University Medical School	(1899)	82.8	
Middlesex College of Medicine and Surgery	(1930)	90.5	
Tufts College Medical School	(1924) 88.3	88.2	
Baltimore Medical College	(1899)	87.5	
College of Physicians and Surgeons Baltimore	(1893)	82	
St Louis University School of Medicine	(1928)	85	
Washington University School of Medicine	(1923)	86.8	
Columbia Univ College of Physicians and Surgeons	(1928)	84.1	
Cornell University Medical College	(1928)	91.4	
Long Island College Hospital	(1911)	90.3	
Medical College of Virginia	(1920)	87.1	
McGill University Faculty of Medicine	(1923)	90	

Idaho October Examination

Hon F F Jenkins, commissioner of law enforcement of Idaho reports the oral and written examination held at Boise Oct 7 1930. The examination covered 13 subjects and included 130 questions. An average of 75 per cent was required to pass. Four candidates were examined and passed. The following colleges were represented:

College	PASSED	Year Grad	Per Cent
Northwestern University Medical School	(1930)	80	
University of Illinois College of Medicine	(1930)	84	
University of Nebraska College of Medicine	(1929)	79	
University of Oregon Medical College	(1929)	85	

Mr Jenkins also reports 4 physicians licensed by the endorsement of credentials at the same meeting. The following colleges were represented:

College	ENDORSEMENT OF CREDENTIALS	Year Grad	Endorsement of
Rush Medical College	(1929) N B M Ex	(1929)	Illinois
University of Michigan Medical School	(1926)	(1926)	Michigan

Wyoming October Examination

Dr W H Hassed, secretary of the Board of Medical Examiners of Wyoming, reports the written examination held at Cheyenne, Oct 6, 1930. The examination covered 13 subjects. An average of 75 per cent was required to pass. One candidate was examined and passed. The following college was represented:

College	PASSED	Year Grad	Per Cent
University of Oregon Medical School	(1924)	(1924)	84.5

Dr Hassed also reports 4 physicians licensed through reciprocity with other states at the same meeting. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
University of Kansas School of Medicine	(1923)	(1929)	Kansas
Creighton University School of Medicine	(1929)	(1929)	Nebraska
University of Nebraska College of Medicine	(1929)	(1929)	Nebraska

Nevada November Examination

Dr Edward E Hamer, secretary of the Medical Board of Nevada, reports the written examination held at Carson City, Nov 25, 1930. The examination covered 15 subjects and included 110 questions. An average of 75 per cent was required to pass. One candidate was examined and passed. The following college was represented:

College	PASSED	Year Grad	Per Cent
University of Buffalo School of Medicine	(1923)	(1923)	83

Dr Hamer also reports one physician licensed through reciprocity with another state at the same meeting. The following college was represented:

College	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
University of Toronto Faculty of Medicine	(1926)	(1926)	Michigan

Book Notices

THE TREATMENT OF ASTHMA By A H Douthwaite M D F R C P Assistant Physician Guy's Hospital Cloth Price, 7/6 Pp 164 London H K Lewis & Co Ltd 1930

The author has endeavored to epitomize the present knowledge of asthma, with especial regard to treatment. This book is intended to help out the recent concerted activities of the Asthma Research Council activities that are arousing the keen interest of many not only in Great Britain and other parts of Europe but also in this country. The author divides asthma into two groups (a) primary, including those patients suffering since childhood and (b) secondary, including those cases which occur after puberty or middle age and follow some respiratory disorder such as influenza. The first type corresponds to our allergic group, or true bronchial asthma. The second includes chiefly the nonallergic or asthmatic bronchitis cases. He pays particular attention to the deformities that arise in chronic cases including emphysema and other chest complications. He lays much stress on Oriel's recent work on isolation from the urine of a protease excreted during an attack in the allergic type of asthma and in many other allergic diseases. This protease when isolated and injected intradermally in minute doses even as low as one part in a million produces a positive reaction; it has no effect on normal individuals nor is an active substance of this nature to be found in their urine. This protease disappears between attacks. As to etiology he is fair and gives allergens local irritants reflex stimulation and psychic influences their proper places. He advocates intradermal tests only if scratch tests are negative. He errs however, in stating that in the case of children it is seldom practicable to perform skin tests because of the fear induced by scalp or hypodermic needle for it is in children that the tests are especially indicated. The remainder of the book is devoted to treatment. The usual drugs are mentioned with the sound advice to avoid morphine unless absolutely necessary. Specific allergic treatment is emphasized and the rarity of cure by major operations. Vaccines are recommended in infectious cases. Physical exercises and massage are stressed at length. A book containing much valuable information.

GRUNDLAGEN UND ENTWICKLUNGSGESCHICHTE DER KINDLICHEN NEUROSE. Von Erich Benjamin. Eine ärztlich-pädagogische Studie. Paper. Price 9 marks. Pp 144 with 5 illustrations. Leipzig: Georg Thieme, 1930.

The author of this little treatise is a children's specialist, not a psychiatrist or a psychologist. He has made his observations at the bedside and in the consulting room. His experience is that of a general practitioner. He believes that the neuroses and psychoses are intimately associated with the constitutional fabric of the individual. He stresses Kretschmer's views, which deal with the relationship of physical type of body and character. He believes that mentality or its perversions like physique and its variations, are to a greater or lesser degree inherited. He has collected a number of typical cases illustrating ties and neuroses, which he describes in effective detail. He studies the period of rebellious stubbornness (trotz periode), which commonly manifests itself about the second year. This is the period when the child begins to recognize to some extent that he must adapt himself in some degree to his environment. He comes in contact with the world and with people. Where the adjustment does not take place readily the child shrinks from his social contacts and seeks to isolate himself or withdraw from the group, and his behavior may become of the infantile or dependent type. He has developed social attitudes which may express themselves in the form of speech disturbances, proxysms of rage, tantrums, anorexia and vomiting. The author bases his observations on the clinical study of 205 children. He believes that every neurosis and psychopathic manifestation has its origin in early childhood. He thinks that the neuroses in boys manifest themselves differently than in girls. In the former it is more common to find some evidence of an arrest of psychic development. Anorexia, sleep disturbances, vomiting and fear occur more frequently in girls than in boys. As a rule the girls made better progress in school than the boys. In contrast to this the boys were restless, presented choreiform symptoms and showed lack of independence, speech difficulties and inability to concentrate. Both boys and girls of this group show lack of confidence and deficiency in initiative. Benjamin is of the opinion that the inferiority complex, physical defects and sexual emotions play a considerable part in the causation of neuroses but are of secondary nature, not primary. Sexuality he thinks, is an expression of the individual's social reaction and the author interprets sexuality in that light. Benjamin emphasizes the importance of early prophylaxis and treatment. Since he maintains that neuroses and psychoses have their origin early in life, the home and the school should combine to give appropriate training and instruction to prevent the formation of nervous habits and tendencies.

TREATMENT OF EPILEPSY. By Fritz B. Talbot, M.D., Clinical Professor of Pediatrics, Harvard University Medical School. Cloth. Price \$4. Pp 308. New York: Macmillan Company, 1930.

This monograph has been written with a great deal of thought toward compiling the various theories regarding the etiology and pathology of epilepsy. A thorough discussion of these phases of the epileptic problem precedes the body of the book, which is concerned with treatment. The author has been known for his consistent and intelligent research on the metabolism of epilepsy and the ketogenic diet therapy in epilepsy. He discusses almost all the modern treatments of epilepsy, including drug treatment and dehydration. His consideration of the technique of the ketogenic diet is masterful and well supplied with practical details. Any one who is concerned with the therapy of epilepsy can secure in this book both a general survey of the field and detailed instructions for the actual technique.

HYPERSENSIBILITES SPECIFIQUES DANS LES AFFECTIONS CUTANÉES. ANAPHYLAXIE, IDIOSYNCRASIE. Par Pasteur Vallery-Radot, professeur agrégé à la Faculté de médecine, médecin des hôpitaux et Mlle V. Heimann, interne des hôpitaux. Paper. Price 25 francs. Pp 146. Paris: Masson & Cie, 1930.

Mention of the name Vallery-Radot gives assurance of the value and dependability of this book. The book is written in Vallery-Radot's simple, clear, readable style which makes it equally useful to specialists and to general practitioners. They give an interesting review of the experimental phases of anaphylaxis, take up the clinical phases of the subject including diagnostic methods and, finally, show the relationship of various

dermatoses such as urticaria, angioneurotic edema, eczema, erythema, pruritus and prurigo to hypersensitivity to foreign matter. They believe that before a skin disorder can be classified as definitely allergic in origin, it should be proved to be due to sensitivity to foreign material. They think that such a conclusion should not be based on the mere finding of an eosinophilia or through obtaining relief by so-called shock therapy. They do not include sensitivity to the action of physical agents in this study, although they recognize its practical importance.

INSTITUTE OF INTERNATIONAL EDUCATION. ELEVENTH ANNUAL REPORT OF THE DIRECTOR. SOME REFLECTIONS ON AMERICAN EDUCATIONAL INSTITUTIONS ABROAD. INSTITUTE ACTIVITIES. Paper. Pp 22. New York: Institute of International Education, 1930.

This bulletin contains the eleventh annual report of the director of the Institute of International Education. It outlines the activities of the institute during the past year in fostering friendly international educational and cultural relations between the United States and Europe, Latin America, the Near East and the Far East. Lists of visiting scholars, publicists, teachers and journalists are included. The report is supplemented by statistical tables of foreign students in American colleges and universities, the distribution of foreign students by institutions in the United States, and a statistical summary by countries of foreign students in the United States.

TECHNIQUES HISTOLOGIQUES DE NEUROPATHOLOGIE. Par Jean Bertrand, directeur de l'École Pratique des Hautes Études. Préface du Professeur G. Guillemin. Paper. Price 50 francs. Pp 323. Paris: Masson & Cie, 1930.

The remarkable growth of neurology was unquestionably due mainly to the progress of neuropathology. Clinical observations are especially valuable when supported by pathology. The famous school of French neurologists—Charcot, Raymond, Dejerine, Pierre Marie—always laid stress on pathology, and the present head of the neurologic service at the Salpêtrière, Professor Guillemin, is the most eager follower of the tradition of the French school of neurology. His chief of the laboratory at the Salpêtrière rendered an exceptional service to neuropathology by publishing his book. The methods of neuropathology research, mainly those of staining, became alarmingly numerous and even confusing. Almost every neuropathologist of prominence prefers certain methods or devises methods of his own. For a beginner in neuropathology, and a general pathologist, it is not easy to become oriented in the mass of staining methods recommended for routine or research work. The existing manuals are either too short or one-sided or compiled by persons who have no personal experience with the majority of methods used. These shortcomings are practically eliminated in the book of Bertrand. Himself a brilliant student and contributor to the science of neuropathology, Bertrand had an extensive experience with the numerous methods which he describes in a clear, precise manner. An interesting chapter is devoted to cell studies in infra-red rays and their use in photomicrography of the central nervous system. The book is undoubtedly a valuable contribution and should be in the hands of every pathologist.

PHYSICAL DIAGNOSIS. By Warren P. Elmer, B.S., M.D., Associate Professor of Clinical Medicine, Washington University School of Medicine, and W. D. Rose, M.D., Sixth edition. Cloth. Price \$10. Pp 903, with 337 illustrations. St. Louis: C. V. Mosby Company, 1930.

At the request of the publishers, Dr. Elmer has taken over the task of completely revising Dr. Rose's work on physical diagnosis, which had gone through five editions. Much of the original has been retained, certain chapters have been rewritten, numerous additions have been made and the whole has been rearranged to fit more nearly the needs of medical students. As it now stands, the book is admirably fitted to be used as a textbook for teaching physical diagnosis. The first part is devoted to the technique of complete physical examination of patients, including examination of the abdomen and extremities, as well as special examinations by such physical means as the x-rays and the electrocardiograph. Anatomic landmarks and surface anatomy are well presented. The second part covers the physical diagnosis of diseases of the respiratory and circulatory systems. In many respects the work fills a long felt need in supplying a modern American textbook on physical

diagnosis in which no part of the body is excluded. The work is profusely illustrated, photographs, drawings, roentgenograms and electrocardiograms are used. In the original editions of Rose, many illustrations from other works were freely used in the present volume greater originality is shown, and it is hoped that in future editions much more of originality will be attempted. The volume is appropriately dedicated to Dr George Dock, whose chief interest was the teaching of medical students.

DIE AVERTIN-ANESTHESIE IN DER CHIRURGIE. Von Professor Dr W. Anshutz, Direktor der Chirurg. Klinik Kiel, Dr K. Specht, Assistent der Chirurg. Klinik Kiel und Priv. Doz. Dr Fr. Tiemann, Assistent der Mediz. Klinik Kiel. Paper. Pp 406 60s, with 9 illustrations. Berlin: Julius Springer, 1930.

This monograph of 200 pages comprises 15 chapters with some 60 subdivisions arranged conveniently for reference. A table of contents, an alphabetical bibliography of nearly 400 references, and, in addition, numerous references relating to allied subjects in footnotes. The subjects discussed include (with their subdivisions) the chemistry of Avertin, preparation of the patient, dosage, methods in common use by different surgeons, basal or full narcosis supplementary (inhalation, local) anesthesia, failures, absorption, time of onset of anesthesia, duration and termination of anesthesia, side actions, deaths, and indications and contraindications. The various subjects are not treated with equal comprehensiveness, but the authors have presented a summary of the voluminous literature with clarity, though perhaps from a somewhat too optimistic standpoint. This is illustrated by the fact that while there is a table presenting 103 deaths that have been reported as being due to "Avertin" (not always so considered by the operator) they exclude 74, the authors consider only 12 as certainly attributable to "Avertin" and 17 as questionably so. Every one who has attempted to analyze the reports of deaths due to anesthesia has encountered difficulties that make it impossible to determine the exact number of fatalities, but several who have studied the literature of "Avertin" believe that it has caused more than 29 deaths. There is hardly one of the fifty or more subdivisions relating to the use of "Avertin" concerning which there is not a diversity of opinion. The authors discuss nine types of the more frequently used methods of employing "Avertin," and these do not include the intravenous method suggested by Kirschner, which is also considered separately. The discussion of dosage and that of indications and contraindications with the diversity of opinion show that there is much to learn before the use of "Avertin" can be established on a scientific basis. It is hardly necessary to state that no one should undertake to anesthetize a patient with "Avertin" before he has studied the subject in great detail and with great care and even then one must proceed cautiously until one has acquired experience—after which one will probably be even more cautious.

TECHNIQUE AND RESULTS OF GRAFTING SKIN. By H. Kenneth Christie, M.S. F.R.C.S. Hon. Surgeon, the Hospital Wanganui, N.Z. Cloth. Price 7/6. Pp 67 with 33 illustrations. London: H. K. Lewis & Company Ltd. 1930.

The material forming the basis of this monograph was obtained largely from a series of about thirty cases of skin grafting on chronic ulcers of the leg. In a few instances skin grafting was done on other portions of the body, especially the hands and the face. General considerations including the anatomy are first briefly discussed. The indications for grafting are followed by a discussion of the choice of the Wolff full thickness skin graft, the Thiersch graft and the tubed pedicle grafts with their technique and after treatment. The subsequent history of these grafts on leg ulcers is made possible by a follow-up in about fifteen cases traced two or three years later. It was found in these cases that Wolff grafts were the most satisfactory method of treating chronic ulcers of the leg. The ulcer was excised, including the fibrous base, bone or tendon was exposed if necessary and the full thickness skin graft was placed over and the edges were sutured. It was observed that portions might slough occasionally, but the main mass remained in spite of some infection. Later the remaining raw areas were Thiersch grafted. In a few cases ulcers developed in adjacent areas but the full thickness graft remained intact. The title of the book is somewhat misleading. It should read "Technique and Results of Grafting Skin for Chronic Ulcers of the Leg."

THERAPIE IN EINZELDARSTELLUNGEN. WISSENSCHAFTLICHE GRUNDLAGEN UND PRAKTISCHE ANWENDUNG. Herausgegeben von Prof. Dr R. von den Velden und Priv. Doz. Dr P. Wolff. Insulintherapie einschließlich der Indikationen bei nichtdiabetischen Erkrankungen. Von Prof. Dr E. Frank. Primararzt der medizinischen Abteilung des Stadt-Wenzel-Hancke-Krankenhauses in Breslau und Dr A. Wagner, Sekundärarzt der medizinischen Abteilung des Stadt-Wenzel-Hancke-Krankenhauses in Breslau. Paper. Price 4.80 marks. Pp 99. Leipzig, Georg Thieme, 1931.

This well written monograph gives a brief but systematic survey of the therapeutic uses of insulin. It opens with a brief review of the historical aspects of the subject and the orthodox views as to the physiology of insulin. The discussion of the treatment of diabetes mellitus and diabetic coma is conservative and presents no innovations. Little space is devoted to consideration of dietary measures. As might be expected, the section devoted to synthalin therapy evinces a belief in its efficacy and freedom from danger not shared by all workers in this field. A section is devoted to insulin therapy of nondiabetic conditions. The conditions discussed are underweight and anorexia, parenchymatous liver disturbances, vomiting and dehydration, hyperthyroidism, infections and trophic disturbances. The authors believe that insulin may be of real value in the treatment of such conditions. This section may interest many who find little of particular moment in the first portion of the volume. The appendix contains tables of the composition and caloric value of common foodstuffs, and a basic diet according to Joslin. A subject index completes the volume. As the title indicates, the authors have presented a good bird's-eye view of insulin therapy with little or no attempt to delve into the nature of the conditions treated.

EMERGENCY SURGERY. Volume I. Abdomen and Pelvis. By Hamilton Bailey, F.R.C.S. Cloth. Price \$8. Pp 380 with 324 illustrations. New York: William Wood & Company, 1930.

This book deals with the treatment of urgent surgical conditions affecting the abdomen and pelvis. It is the first volume of a two volume work. Assuming that the diagnosis is made in each case, the author proceeds in the most painstaking detailed manner with the treatment of the condition presented from the indications through the various steps of the operations to the closure of the abdomen including, in most cases, the immediate postoperative care. The dangers and pitfalls that may occur are mentioned and adequate advice given as to how to avoid them. The procedures and operations chosen in each case are standardized, modern and fully described. The book contains a vast amount of reliable information well arranged and stated simply, yet clearly and forcefully. It is interesting to note that transfusions of saline solution, dextrose and blood are extensively used and advised in urgent surgery. The only point on which one may differ with the author is in his treatment of gastric tetany for which, among other things, parathyroid extract is advised but no saline solution. Numerous excellent and lucid illustrations, some of them in color, add enormously to the value of the book and clarity of the text. The bibliography is short, the references being carefully selected and properly limited to the requirements of the average reader. Obviously the author has had an extensive experience with emergency surgery. The teachings embodied in his book will prove valuable to young surgeons and will fill a useful niche in the libraries of those more mature.

EINFÜHRUNG IN DIE PATHOLOGISCHE HISTOLOGIE DER WICHTIGSTEN PULPA- UND KIEFERERKRANKUNGEN, ODER DER HAUTSCHLEIMHÄUTUMOREN DER MUNDHÖHLE. Von Dr Alfred Kuhn. Privatdozent am Zahnärztlichen Universitätsinstitut zu Leipzig. Paper. Price 6 marks. Pp 57 with 4 illustrations. Leipzig: Georg Thieme, 1930.

As stated by Romer in the introduction, this book presents the most important pathologic changes in the teeth and adjacent structures including tumors in the form of characteristic photomicrographs and a short descriptive text. In spite of the high degree of condensation the descriptive matter is clear and well written. The choice of material is excellent and inclusive; the photographs are of a high grade and made from well prepared specimens; the reproductions maintain the same high standard of quality and the paper and printing are of the best. Teacher, student and practitioners can profit from the use of this guide to outline course, to provide suitable illustrations where such material is lacking and to direct the study of prepared specimens.

Medicolegal

Emergency Operation Under a Workmen's Compensation Act

(Ocean Accident & Guarantee Corporation v. Lauce (Texas)
25 S W (2d) 665)

An employee, in the discharge of her duties, was struck on the side with a pole. She was operated on for traumatic appendicitis. Thereafter she brought suit to recover compensation under the workmen's compensation act. The jury, on special issues submitted to them found that the appendicitis resulted from the blow, that she was incapacitated, and that she incurred certain expenses for medical services. They found however that before undergoing the operation the injured employee did not request her employer to furnish medical and surgical services. Judgment in her favor resulted, and the insurance carrier appealed to the Court of Civil Appeals, San Antonio Texas.

The insurance carrier contended, among other things, that the operation was performed contrary to the provisions of section 12e of art 8306, Revised Statutes of Texas, which provides that when an employee is injured and a surgical operation will effect a cure or materially and beneficially improve his condition, the employee may demand such an operation. The demand must be made in writing. The Industrial Accident Board must then order a medical examination, and the physician must make a written report. If by the examination report of facts and opinions of experts all reduced to writing and filed with the board, it is shown that an operation is advisable, the board must so state in writing, and on a unanimous order of the board in writing, a copy of which must be delivered to the employee and to the association, must direct the employee at a time and place therein stated to submit himself to an operation for the injury.

While this "red tape," said the court, is being wound and unwound, the spirit of the poor employee may have winged its flight to a fairer and better region. In a case of acute appendicitis, as the present case seems to have been, delay is thought to be dangerous in the extreme and an operation swiftly demanded. The tediousness of the Industrial Accident Board and its reports in writing, slow and uncertain, are placing the life or death of the employee at stake and, like unto the English "Circumlocution Office" so graphically described by Charles Dickens in his "Bleak House," are hanging the employee in the dreadful balance between two eternities. No law can enforce such an absurdity against a human being. The injured employee was in a hospital suffering from an infection which threatened death. She was in no condition to go through winding mazes of a circumlocution office. In a case of grave emergency, an injured employee should be permitted to recover compensation authorized by the statute, even though the very tedious process set out in the statute for obtaining the services of a surgeon are not complied with. The court was nevertheless of the opinion that there should be clear allegations of the emergency and full proof to sustain the allegations before a recovery should be allowed. As these conditions were not complied with in the pleadings, the judgment of the lower court was reversed and the case remanded.

Failure to Remove Placenta

(McDaniels v. Moth (Iowa) 250 N W 311)

The plaintiff sued the defendant-physician for malpractice. She alleged that when he attended her in childbirth he negligently failed to remove parts of the placenta, which decomposed and caused septicemia. At the conclusion of her evidence, the court directed a verdict in the physician's favor and she appealed to the Supreme Court of Iowa.

Medical experts for the patient, said the Supreme Court testified that septicemia would be the natural and probable result of retention of parts of the placenta and that if the physician had examined the placenta he might have determined approximately whether or not any part of it had been retained. But, said the court, it does not appear that even if he had made such an examination some parts of the placenta might not still have

been retained. If he had discovered that the placenta had not been expelled, he might according to the plaintiff's medical experts, have properly relied on the removal of the debris from the uterus by hemorrhage, which might go on for a week or so. If he had attempted artificial removal of the retained parts of the placenta, he might have exposed the plaintiff to the danger of infection from sources other than the retained placental tissue. The defendant physician, therefore, according to the evidence, was compelled to exercise his judgment. There was no evidence that good practice or ordinary care required him to make exploration and removal, and thereby take the chance of setting up another infection. His failure if there was any, to inform himself adequately did not cause the infection. If he had learned of the retention of a part of the placenta, it does not appear that proper practice and due care would have required him to remove them by artificial means, or in time to prevent infection from the retained tissue. Even if he had by artificial means removed the placental tissue, infection from that act or from some other source might have resulted. Granting that he omitted to make an examination and to remove retained placental tissue, there was no evidence to indicate that he failed in the exercise of the knowledge and care ordinarily exercised by physicians in the same locality or similar localities, or in the exercise of due care. The judgment of the trial court, in favor of the defendant physician, was therefore affirmed.

Workmen's Compensation Acts Infection Under a Callosity Compensable—The claimant operated a listing machine, requiring about 10,000 operations daily. A callosity formed on a finger, and infection developed under the callosity, necessitating an operation and causing permanent disability. Under the circumstances, said the Supreme Court of Tennessee, the employee might well have expected a callosity to appear on her finger tip, as they often do on the finger tips of stenographers and violinists. The appearance of an infection, however, was something fortuitous, not to be expected, an unusual event or result, and therefore accidental. If it be argued that the callosity required too long to develop to be regarded as an accident it may be answered that it is not the callosity but the superadded infection which constituted the injury, and that this manifested itself suddenly. The injury was therefore compensable.—*Scars-Roeback & Co v. Starnes* (Tenn.) 26 S W (2d) 128.

Society Proceedings

COMING MEETINGS

- Alabama Medical Association of the State of Birmingham April 21-24
Dr D L Cannon 519 Dexter Avenue Montgomery Secretary
- American Association for the Study of Gout Kansas City Mo April 7-9
Dr J R Yung 670 Cherry Street Terre Haute Ind Secretary
- American Association of Anatomists Chicago April 2-4
Dr George W Corner University of Rochester School of Medicine Rochester N Y Secretary
- American Association of Pathologists and Bacteriologists Cleveland April 2-3
Dr H T Karsner 2055 Adelbert Road Cleveland Secy
- American College of Physicians Baltimore March 23-27
Mr E R Loveland, 133 South 36th Street Philadelphia Executive Secretary
- American Orthopedic Association Memphis Tennessee April 15-18
Dr Forest P Willard 1916 Spruce Street Philadelphia Secretary
- American Pediatric Society Edgewater Park Mississippi April 15-17
Dr H C Carpenter 1805 Spruce Street Philadelphia Secretary
- American Physiological Society Montreal April 8-11
Dr Arno B Luckhardt 5216 Greenwood Avenue Chicago Secretary
- American Society for Experimental Pathology Montreal April 8-11
Dr C Philip Miller Jr University of Chicago Department of Medicine Chicago Secretary
- American Society for Pharmacology and Experimental Therapeutics Montreal April 8-11
Dr E D Brown University of Minnesota Medical School Minneapolis Secretary
- American Society of Biological Chemistry Montreal April 8-11
Dr H B Lewis University of Michigan Medical School, Ann Arbor Mich Secretary
- Arkansas Medical Society Texarkana April 21-24
Dr William R Bathurst Boyle Building Little Rock Secretary
- Federation of American Societies for Experimental Biology Montreal April 8-11
Dr H B Lewis University of Michigan Medical School Ann Arbor Mich Secretary
- Louisiana State Medical Society New Orleans April 14-16
Dr P T Talbot 1430 Tulane Avenue New Orleans Secretary
- North Carolina Medical Society of the State of Durham April 20-22
Dr L B McBraver Southern Pines Secretary
- Southeastern Surgical Congress Atlanta Ga March 9-10
Dr B T Beasley, 45 Edgewood Ave Atlanta Ga Secretary
- Tennessee State Medical Association Knoxville April 14-16
Dr H H Shoulders 706 Church Street Nashville Secretary

Current Medical Literature

AMERICAN

The Association Library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Issues of periodicals are kept on file for a period of five years only. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Psychiatry, Baltimore

10 363 549 (Nov.) 1938

- Unconditioned and Conditioned Reactions to Pain in Schizophrenia. L. Bender and P. Schilder. Baltimore—p. 363.
Modern Treatment of Mental Disorders in German Hospitals. M. Weigandt. Hamburg—p. 385.
Biochemistry of Brain Blood by Internal Jugular Puncture. A. Myerson and R. D. Halloran. Boston—p. 389.
Erythema (Polycythemia) with Psychosis. M. Levin. Philadelphia—p. 407.
*Thyroid Factor in Dementia Praecox. R. G. Hoskins and F. H. Sleeper. Worcester, Mass.—p. 411.

Thyroid Factor in Dementia Praecox.—Among 130 subjects of dementia praecox reported on by Hoskins and Sleeper a group of 18 were diagnosed as suffering from thyroid deficiency. Of these, 16 received thyroid treatment. Significant mental improvement followed in 14, or 88 per cent of the cases and 5 patients became well enough to go home. In a control group of 41 patients receiving similar treatment, the incidence of significant improvement was 34 per cent. There was probably some degree of thyroid deficiency in various subjects of the control group since 31 were recorded as showing "endocrine deficiency unclassified." A considerable number of the control subjects received other than thyroid medication, which probably contributed to the improvement shown. In general cases presenting a favorable initial prognosis were excluded from treatment. The results of the study are interpreted as indicating that thyroid deficiency plays a significant part in more than 10 per cent of state hospital cases of dementia praecox and that in properly selected cases thyroid medication in adequate dosage and for a sufficiently prolonged period results in significant improvement. On the other hand relatively little success is to be anticipated from thyroid medication in cases selected at random.

Archives of Neurology and Psychiatry, Chicago

25 1226 (Jan.) 1931

- *Anastomosis of Nerves. C. Ballance. London—p. 1.
*Pathologic Changes in Paralysis Caused by Drinking Jamaica Ginger. A. R. Vonderahe. Cincinnati—p. 29.
*Congenital Cerebral Cysts of Cavum Septi Pellucidi (Fifth Ventricle) and Cavum Vergae (Sixth Ventricle). Diagnosis and Treatment. W. E. Dandy. Baltimore—p. 44.
*Clinical Syndrome of Corpus Callosum. B. J. Alpers and T. C. Grant. Philadelphia—p. 67.
Spasmodic Lateral Conjugate Deviation of Eyes. C. Davison and S. P. Goodhart. New York—p. 87.
Syphilis (?) of Oculomotor Nerve. G. B. Harris. Chicago—p. 116.
Encephalography. C. D. Camp and R. W. Waggoner. Ann Arbor, Mich.—p. 128.
*Arsenic in Spinal Fluid: Quantitative Estimation Following Intravenous Administration of Triarsamide and Silver Arsenite. H. H. Cornwall, H. A. Pomeroy and C. A. Myers. New York—p. 137.
*Manic-Depressive Psychosis: Hereditary Factors and Clinical Course. H. A. Priskind. Chicago—p. 144.
Ophthalmoplegia Internuclearis and Other Supranuclear Paralysis of Eye Movements. W. F. Monereff. Chicago—p. 145.
Prismata as Early Symptom in Multiple Sclerosis. S. D. Wilgus and E. W. Fell. Rockford, Ill.—p. 155.
Inability to Laugh Audibly. Aphongelia. M. Levin. Philadelphia—p. 157.
Quantitative Pupillary Light Reflex. L. Lefterfeld. Philadelphia—p. 159.
Malignant Tumor of Solar Plexus. F. C. Helwig, C. H. Hoxie and L. L. Miller. Kansas City, Mo.—p. 160.

Anastomosis of Nerves.—Ballance relates the results of experiments in which the central end of the divided cervical sympathetic nerve was anastomosed to the peripheral end of the divided facial nerve and to the peripheral end of the divided hypoglossal nerve. Complete functional and anatomic recovery

of the striated muscles of the face, tongue and depressor muscles of the hyoid bone and larynx were observed. No muscle fibers of the face or tongue muscles or of the sternohyoid or sternothyroid muscles appeared to be atrophied as they should be if a dual innervation was necessary for complete restoration of function. The sympathetic nerve fibers seem to join at the anastomoses with the larger cranial nerve fibers and there is no evidence in the microscopic sections that they continued into the cranial nerve trunks. Ballance inclines to the belief that these experiments give support to the view that the anatomic and functional perfection of striated muscle depends on a dual innervation.

Pathologic Changes in Paralysis Caused by Drinking Jamaica Ginger.—Four cases of poisoning with commercial extract of Jamaica ginger are reported by Vonderahe. One case is reported in detail. This case was uncomplicated by other pathologic factors and involved death by ascending paralysis and bulbar involvement. The pathologic studies revealed degenerative changes in the radial and anterior tibial nerves, degenerative changes in the anterior roots, and marked pathologic changes in the anterior horn cells, characterized by swelling, chromatolysis, eccentric nuclei and death of the cells, and occasionally by shrinking of the cells. Central chromatolysis was the predominating type of cell change. All sections showed infiltration with amyloid bodies. The sensory nuclei were only slightly affected. The fiber tracts of the brain stem and spinal cord remained unaffected. Severe cellular changes, similar to those found in the anterior horn cells, were noted in the hypoglossal nucleus and the dorsal motor nucleus of the vagus and nucleus ambiguus. There were no pathologic signs of inflammation, no phagocytic glia cells, lymphocytes, polymorphonuclear leukocytes or endothelial cells. The pathologic observations suggest a toxin which reaches the peripheral nerves in the extremities through the circulation but which subsequently travels into the central nervous system along the nerve fibers and anterior roots. Thus, in addition to the central chromatolysis in the motor cells of the anterior horn associated with involvement of the peripheral nerve, diffuse chromatolysis and death of the cells also occur. The toxin, in severe cases, may then make its way to the medulla where involvement of the vagal nuclei produces death by bulbar paralysis. There is an obvious tendency of the toxin to exert its pathologic effect most severely on motor cells and fibers. The pathologic observations can hardly be regarded as characteristic of any one toxic agent. They serve to eliminate, however, all possibility of the epidemic being infectious in origin.

Congenital Cerebral Cysts.—Two cases of cysts of the cavum septi pellucidi and cavum vergae are reported by Dandy. In each case the two cavities were continuous. The cysts acted as tumors and caused compression of the motor tracts on both sides. Mental symptoms were decided in both cases. One patient had peculiar epileptic attacks of varying character but indicating bilateral involvement of the motor tracts. Suggestive evidence of intermittent intracranial pressure existed in both instances. The diagnosis of cysts of this type cannot as yet be made by clinical signs and symptoms. The diagnosis is easily made by ventriculography. The ventriculographic picture appears to be pathognomonic. An operation is offered for cysts of this character. One patient was well and apparently normal eight months after operation. His physical and mental status was entirely changed by correction of the underlying cause.

Clinical Syndrome of Corpus Callosum.—Alpers and Grant report five cases involving the corpus callosum. In four of the cases the tumor had spread to the surrounding brain tissue so that more than the corpus callosum was involved. In all five cases the tumor involved the anterior portion of the corpus callosum and the frontal lobe as well. There is a clinical syndrome indicating involvement of this structure. This syndrome is most characteristic when the presenting symptoms include mental disturbances, hemiparesis and motor apraxia. A syndrome with the mental symptoms described and with hemiparesis and apraxia is almost characteristic of involvement of the corpus callosum. Less characteristic, but more indicative of callosal implication if tumor is a syndrome consisting of pronounced mental symptom with drooping of the

hemiparesis. In addition, there may be evidences of increased pressure and dyssynergia. It is hazardous to state that such a syndrome as that last mentioned is characteristic of disease of the corpus callosum, but in the authors' experience the mental symptoms that have been found in cases of tumor of the corpus callosum are so strikingly similar in all cases as to justify the statement that in cases with evidences of increased pressure, with mental signs of apathy, indifference, lack of concentration, change in personality and occasionally psychotic manifestations, occurring in the presence of a hemiparesis or even without, a tumor of the corpus callosum should be strongly suspected. The probabilities are that in such cases a tumor will be found in this location.

Arsenic in Spinal Fluid—Cornwall et al. conclude from their study that the favorable clinical results that have been reported in neurosyphilis as a result of treatment with trypan-blue must be ascribed to factors other than the actual quantity of arsenic that enters the spinal fluid.

Manic-Depressive Psychosis—Four hundred and eighty-five cases of extramural manic depressive psychosis were studied by Paskind to determine whether or not any correlation existed between familial neuropathic factors and the age of onset, the length of the attacks and the length of the intervals. A rather definite correlation was found.

Archives of Pathology, Chicago

10 823 989 (Dec.) 1930

- *Experimental Lesions of Brain from Carbon Monoxide. C. B. Semerk, Chicago and L. H. Bacon. San Bernardino Calif.—p. 823.
- Standardized Procedure for Microscopic Studies on Heart. L. Gross, W. Antopol, G. Blumenthal, Jr. and B. Sacks. New York.—p. 840.
- *Argentaffin Tumors of Small Intestine. Four Cases. G. Ritchie. Madison Wis.—p. 853.
- *Experimental Subacute Amyloid Nephrosis in Rabbits. E. M. Butt, San Francisco.—p. 859.
- Pathogenesis of Bacterial Endocarditis. K. Semsroth and R. Koch. Pittsburgh.—p. 869.
- Endometriomyoma of Umbilicus. N. Enzer. Milwaukee.—p. 879.
- *Variation in Weight of Thyroid Gland and Frequency of Abnormal Enlargement in Region of Chicago. R. H. Jaffe, Chicago.—p. 887.

Experimental Lesions of Brain from Carbon Monoxide—Experiments made by Semerk and Bacon demonstrate that the effect of carbon monoxide varies in different animals; that it is rapidly eliminated by rabbits and guinea pigs, that rabbits are especially resistant to the gas, and that the weight of the animals, the amount of the gas and the manner of administration modify its action. Symmetrical lesions in the brains of the dogs and more rarely in those of guinea pigs and rabbits, lesions resembling those occasionally found in human brains, may be produced experimentally by injecting the gas into the arterial blood stream or by having the animals inhale pure carbon monoxide or illuminating gas. When pure carbon monoxide is injected into the blood stream it combines so rapidly with the hemoglobin that gas embolism does not occur, or at least not with doses such as were injected in these experiments. Ten cubic centimeters of air alone injected into the carotid arteries of dogs causes severe convulsions, is more frequently and speedily fatal than a similar amount of carbon monoxide, and results in fewer gross changes, these being rarely in the basal ganglia.

Argentaffin Tumors of Small Intestine—Four cases of argentaffin tumor of the small intestine (carcinoid) are reported by Ritchie, one with mesenteric and hepatic metastases. A brief review of opinions as to the nature of these tumors is made, and the conclusions drawn are (1) that the nature of the tumors depends on the nature of the chromo-argentaffin cells of the normal intestine not yet understood and (2) that until this point is decided argentaffin tumors must be placed in the same category as basal cell epitheliomas of the skin, with reference to malignancy and general characteristics.

Experimental Subacute Amyloid Nephrosis in Rabbits—A method has been found by Butt to produce amyloid nephrosis in rabbits. The production of the lesion depends on the regulation of the doses of manganese chloride given subcutaneously so as to permit chronic poisoning. The amyloid degeneration is usually limited to the kidneys except occasionally when the spleen in addition to the kidneys may be involved. The identification of this amyloid-like substance as amyloid is

based on its reaction with the stains that are considered specific for amyloid, i. e., methyl violet and iodine.

Variation in Weight of Thyroid Gland and Frequency of Abnormal Enlargement in Region of Chicago—Jaffe asserts that the average weight of the thyroid gland in the region of Chicago is, for white men, 27.4 Gm., for white women, 28.1 Gm., for Negro men 27.4 Gm., for Negro women, 24.6 Gm., for Mexican men, 23 Gm., and for Mexican women, 26 Gm. The greatest weight of the thyroid gland is found in white men between the ages of 20 and 30, in Negro men between the ages of 50 and 60 in white women between the ages of 30 and 50 and in Negro women between the ages of 30 and 40. Diffuse enlargement of the thyroid gland is more common in persons below the age of 50 than in those above this age. It is more frequent in the male than in the female sex. There are no differences in its incidence as between the two races. The frequency of nodose goiter increases with advancing age. It reaches its maximum in white men in the sixth and in white women in the seventh, in Negro men in the sixth and in Negro women in the sixth decade of life. Nodose goiter is more common in females than in males, and there is a greater disposition to it in the white race than in the Negro race. The percentages for nodose goiter are: white male, 30; white females, 44.7; Negro males, 14.5; and Negro female, 25.6. Sixty-nine and three tenths per cent of goiters are nodose. The majority of nodose goiters are of moderate size, weights above 100 Gm. are rare. The nodes are usually small, seldom reaching a diameter above 4 cm.

Archives of Surgery, Chicago

2 1178 (Jan.) 1931

- *Peritonitis. I. Correlation of Bacteriology of Peritoneal Exudate and Clinical Course of Disease in 106 Cases of Peritonitis. F. L. Melaney, H. D. Harvey and H. Z. Jern. New York.—p. 1.
- Oxygen Therapy. Insufflation into Oral Pharynx. A. J. Wineland and R. M. Waters. Madison Wis.—p. 67.
- *Toxin of Bacillus Welchii in Toxemia of Acute Intestinal Obstruction. H. F. Thurston. Indianapolis.—p. 72.
- Continuous Intravenous Injection of Dextrose in Ringer's Solution. Technique and Indications and New Intravenous Cannula. J. S. Hotley and G. W. Horsley. Richmond Va.—p. 86.
- *Fate of Cortical Bone Graft. C. Davison and A. Kraff. Chicago.—p. 94.
- *Vaccination Against Peritonitis in Surgery of Colon. F. W. Rankin and J. A. Bergen. Rochester Minn.—p. 98.
- Histoecial Cysts. E. Drennen. Birmingham Ala.—p. 106.
- *Closed Method of Treatment of Fractures of Ankle Joint. C. Lorenzetti. Milan. Italy.—p. 121.
- *Regeneration of Hyaline Cartilage in Joints. A. R. Shands, Jr., Durham N. C.—p. 137.

Peritonitis—Studies made by Melaney et al. showed that the great majority of patients with peritonitis who come to a general hospital have lesions of the appendix. If the inflammation is limited in extent the peritoneal exudate yields few organisms on smear or culture. If the appendix has not perforated, the disease is usually not fatal, whether the appendix is gangrenous or simply inflamed, the course is mild and the patients are able to return home in about two weeks. If the appendix has perforated, the inflammation is frequently extensive, the peritoneal exudate is profuse, and yields great numbers of bacteria of several different species. The disease is frequently fatal, the course is stormy and the patient who survives has to stay in the hospital about twice as long as if it had not perforated. In gangrene of the appendix there was no evidence from an examination of the peritoneal fluid that the spore-forming anaerobic bacteria either pathogenic or non-pathogenic, are particularly active. Perforative lesions of the small intestine promptly gave severe symptoms. Perforative lesions of the large intestine caused symptoms to develop more slowly and in spite of the fact that they occurred in older people and that more bacteria were found both in smear and in culture, including *Clostridium welchii*, which was invariably present, the large majority of these patients, four of five, recovered. Perforative lesions of the gallbladder were always fatal. Without respect to the cause of the peritonitis in three fifths of the patients coming to the hospital within twenty-four hours in our series the lesion was local, the symptoms were mild, the peritoneal exudate was not profuse, and organisms were rarely seen in smear or obtained in culture. Diffuse peritoneal inflammation was rarely found in cases with symptoms of less than twelve hours duration, but usually in later cases. The

cases with diffuse peritonitis were more severe the peritoneal fluid was profuse, and usually many organisms were seen on smear and recovered in culture. Complications were frequent, and a third of the patients died. When abscesses had formed the history was usually of long duration, although symptoms were moderately severe and there was much thick fluid containing many organisms, both on smear and on culture. The mortality was just half that of the diffuse group. Smears of the peritoneal fluid made at the time of operation and compared with the culture seemed to be of real prognostic importance. When cases of peritonitis were divided into groups according to the number of bacteria that appeared in the peritoneal exudate, it was found that thirty-five cases yielded no organisms, eleven yielded one, fourteen two, fifteen three, nineteen four, nine five, and three six species. In the great majority of cases yielding no growth, the disease was limited to the focus of infection. There were three principal bacterial species of peritoneal exudates. Nonhemolytic *B. coli* was present in 87 per cent of the cases in which bacteria were found; green streptococci were present in 49 per cent, and *C. welchii* was present in 38 per cent. Altogether, twenty-three different bacteriologic groups were recovered. Peritonitis was usually a polymicrobial disease. In only eleven of the seventy-one cases that yielded growth was a single species found. For that reason it was virtually impossible to evaluate the rôle played by each one. There were no fatal cases in the acute local peritonitis group. A third of the cases of acute diffuse peritonitis were fatal. A sixth of the cases of abscess were fatal. All but one of the deaths occurred in cases of perforative lesions in which there was not only a bacterial but a chemical and a foreign body factor. Every case of perforated ileum was fatal and only one of five in the group with perforated colon. Only one patient with a single infecting organism died; that organism was a hemolytic streptococcus. Although a third of the patients were less than 20 years of age, none of these patients died. In the next two decades only three of thirty died. After the age of 40, the mortality increased considerably with age.

Toxin of *Bacillus Welchii* in Toxemia of Acute Intestinal Obstruction.—Thurston failed to elicit any evidence that toxins of *B. welchii* are a factor in the toxemia of acute intestinal obstruction.

Cortical Bone Graft.—Davison and Kraft are of the opinion that an autoplasmic cortical bone graft transplanted aseptically into cortical bone with perfect mechanical adaptation and fixation will heal by primary intention, with preservation of the vitality of the graft.

Vaccination Against Peritonitis in Surgery of Colon.—These studies by Runkin and Borgen emphasize the value of preoperative protection by vaccine against peritonitis in procedures in which resection of parts of the large intestine are involved. It has been amply demonstrated that protection against lethal peritonitis can be established in animals. The relatively transient nature of such immunity is noteworthy. The time element between vaccination and operation is important. The amount of vaccine injected has less significance but is important. The systemic reaction of the patient is often moderately severe but endures only a short period and is never alarming. That the logical preventive reagent is a vaccine prepared from streptococci and colon bacilli is suggested by the predominant presence of these organisms in the exudate in fatal cases of peritonitis and their vast predominance in and around malignant lesions of the large intestine.

Treatment of Fractures of Ankle Joint.—Lorenzetti believes that the closed treatment of fractures of the ankle joint, if properly employed, satisfies all the surgical indications. This statement applies to the more serious malleolar fractures with the marginal fragment at the lower end of the tibia and to those with pluridirectional displacements of the tibiotalus and of the foot. In 435 consecutive fractures of this type observed by him, operation has not been required.

Regeneration of Hyaline Cartilage in Joints.—Experiments have been performed by Shanks on the joints of fourteen dogs to study the regeneration of the hyaline cartilage in superficial and deep defects and on the reaction of this cartilage to direct trauma. The results of these studies show

that hyaline cartilage in joints does not regenerate in less than four weeks. The best evidences of regeneration are found in twelve weeks. Regeneration of hyaline cartilage has been found in superficial defects not involving the subchondral bone. The greatest amount of regeneration, however, is seen in those deep defects which do involve the subchondral bone. Hyaline cartilage is observed to react occasionally to direct trauma with a proliferation of nests of new cartilage cells. No striking difference in the regenerative powers of cartilage in different areas of the knee joint can be demonstrated. No definite evidence of a perichondrium covering the articulating surfaces of hyaline cartilage has been observed.

Journal of Clinical Investigation, Baltimore

9: 43-554 (Dec. 20) 1930

- *Tolerance of Normal Subjects to Levulose Factors Influencing Variations in Rise in Blood Sugar. N. Jolliffe. New York.—p. 365.
- *Nucleotide Therapy in Agranulocytosis. P. Reznikoff. New York.—p. 81.
- *Congestive Heart Failure. VI. Effect of Overwork and Other Factors on Potassium Content of Cardiac Muscle. J. A. Callahan, G. E. Cullen, G. Clark, and T. R. Harrison. Nashville, Tenn.—p. 393.
- Id. VII. Effect of Overwork on Potassium Content of Skeletal Muscle. J. A. Callahan, G. E. Cullen, and T. R. Harrison. Nashville, Tenn.—p. 405.
- *Number of Formed Elements in Urinary Sediment of Patients Suffering from Heart Disease. H. J. Stewart and N. S. Moore. New York.—p. 409.
- Variations of Specific Gravity of Plasma of Blood and Means Available for Altering It. N. S. Moore and H. J. Stewart. New York.—p. 423.
- Optical Activity of Cerebrospinal Fluid in Suppurative Meningitis and Its Lactic Acid, Sugar and Chloride Content. S. L. Wright, Jr., E. F. Herr, and J. R. Paul. Philadelphia.—p. 443.
- Proportion of Certain Important Inorganic Constituents in Dying Heart Muscle. L. C. Scott. New Orleans.—p. 463.
- Carbon Dioxide and Oxygen Tensions of Mixed Venous Blood of Man at Rest. D. W. Richards, Jr., and M. L. Strauss. New York.—p. 475.
- *Liver Extract, Liver Ash and Iron in Treatment of Anemia. C. S. Keefer, K. K. Huang, and C. S. Yang. Peiping.—p. 533.

Tolerance of Normal Subjects to Levulose Factors Influencing Variations in Rise in Blood Sugar.—A metyone levulose tolerance tests and twelve dextrose tolerance tests have been performed by Jolliffe on normal subjects under a variety of conditions. Results have been tabulated according to the fasting blood sugar level. In normal subjects the maximum blood sugar following administration of 30 to 50 Gm (based on body weight) of levulose by mouth rarely exceeds 115 mg per hundred cubic centimeters. A rise in blood sugar to 125 mg or over should be considered an abnormal response to the oral administration of levulose. In the group of convalescent subjects included in this study the levulose tolerance was the same as in the normal subjects studied. Triplicate levulose tolerance tests performed on normal subjects seven or more days apart do not show significant variation in their blood sugar curves. In normal subjects the rise in blood sugar above the fasting level following the oral administration of levulose varies inversely with the height of the fasting blood sugar level. It seems probable that there is a level of blood sugar varying from 95 to 110 mg which, when exceeded, stimulates the sugar storage mechanism to clear the blood rapidly of its excess sugar. A period of ten or fifteen minutes elapses after this excitatory ceiling is reached before the sugar storage mechanism begins to cause a significant fall in blood sugar. The rise in blood sugar above this level depends on the rapidity of absorption of the sugar administered. The rapidity with which the blood sugar falls from its peak probably depends on the glycogen forming ability of the sugar used.

Nucleotide Therapy in Agranulocytosis.—Reznikoff states that nucleotides given intravenously have the power of raising the peripheral polymorphonuclear count in certain agranulocytic conditions. Three patients suffering from agranulocytic anemia recovered after intravenous injections of nucleotides during the course of their disease.

Effect of Overwork on Potassium Content of Cardiac Muscle.—It is believed by Callahan et al. that overwork causes loss of potassium from heart muscle and that this loss is one of the predisposing factors to cardiac rigidity and failure.

Number of Formed Elements in Urinary Sediment of Patients Suffering from Heart Disease.—The number of casts found by Stewart and Moore in twelve hours was usually increased in patients suffering from cardiac disease. In only

the number may be normal. If the average numbers are considered the greatest numbers were passed by those patients suffering from heart failure of the congestive type, the numbers were fewer after recovery and fewer still in those who had never suffered from this illness. Granular casts were frequently found. The number of red blood cells in the urine of patients who had experienced cardiac decompensation was frequently greater than the highest normal value but within the limits in those who had never suffered from heart failure. The average number of red blood cells found in those cases which had never experienced heart failure was twice as great as that in normal individuals in those who were suffering from heart failure or had recovered from it however the average number was from ten to fifteen times as great as in normal individuals. The number of white blood cells was normal in the urine of those patients who had not suffered from heart failure but the average number was approximately twice the average observed in normal individuals. The number was usually within the normal range both during and after recovery from cardiac decompensation, the average number, however, was greater approximately nine and three times, respectively than that in normal individuals the average being less in patients without heart failure than in those who had recently recovered from it and less than in those who were still suffering.

Liver Extract Liver Ash and Iron in Treatment of Anemia—Keefer et al report the results of a study of the effect of feeding liver extract liver ash and iron to patients with various forms of anemia. The following facts were evident. Liver extract was of demonstrable value in increasing the regeneration of hemoglobin in some of the obscure nutritional anemias of childhood, in some of the anemias associated with dysentery in hookworm infestation and in pregnancy. In some cases its effect could be enhanced by iron. Liver ash, when given in amounts that were equivalent to 300 Gm of whole liver, was of little demonstrable value in increasing hemoglobin regeneration. In some cases there was a slight increase in the reticulocytes, hemoglobin and erythrocytes, but the results were never as conspicuous as those obtained with liver extract or large doses of iron. Iron was effective in the treatment of various forms of anemia. Large doses were more effective than small ones. In many instances the effect of iron exceeded liver, liver extract or liver ash, and in some cases a favorable response did not occur until iron was added. When recovery from the anemia followed either liver extract or iron, there was an increase in the reticulocytes of the circulating blood. The lower the erythrocyte count before treatment, the higher were the reticulocytes at the peak of the rise.

Laryngoscope, St. Louis

40 867-928 (Dec.) 1930

- Anesthetic Problem in Otolaryngology R Levy Denver—p 867
Local Anesthesia in Mastoidectomy I M Hubby New York—p 874
Vasomotor Rhinitis J J Pressman Philadelphia—p 878
Osteoma of Frontal Sinus R O Leavenworth St. Paul—p 885
Cause and Treatment of Some Frontal Headaches L Weiss Newark N J—p 892
Orientation of Sound—Probable Function of Vestibular Labyrinth E Roth Flushing L I N Y—p 900
Varicose Aneurysm of Auricle F W Graff New York—p 904
Elongated Styloid Processes Formation and Clinical Significance M M Kufin Chicago—p 907
Agranulocytic Angina H Horn New Haven Conn—p 910
Improved Armamentarium for Tonsillectomy H Nevert New York—p 915
Technic of Antrostomy R M Mooe San Bernardino Calif—p 919

Missouri State Medical Assn Journal, St. Louis

28 140 (Jan.) 1931

- Present Day Treatment with Female Sex Hormone I Immert St. Louis—p 1
Trigeminal Neuralgia and High Blood Pressure W T Coughlin St. Louis—p 2
Structural Changes in Kidneys in Hypertension and Glomerulonephritis F C Kerr Kansas City—p 4
Toxic Coter Early Symptoms Diagnosis and Treatment Cardiac Factor T H Hanser St. Louis—p 6
Obesity Classification and Management A C Clasen and A M Cinsburg Kan. City—p 12
*Arthritis of Feet J R Elliott Kansas City—p 15
Diagnosis of Common Anorectal Diseases F B Campbell Kansas City—p 16
Intussusception Case E W Hickson Milan—p 17

Arthritis of Feet—Elliott concludes that painful feet which do not respond to postural treatment are likely to be arthritis with or without manifestations elsewhere in the body. Feet in which the pain is unduly severe may be presumed to be arthritic. Sudden onset of extreme pain in feet should be considered arthritic in origin, and search should be made for the primary focus. Pain in the heel of the so called spur type is in most cases of infectious origin arising from an inflammation of the calcaneal bursa.

New England Journal of Medicine, Boston

207 1115-1180 (Dec 4) 1930

- Anterior Poliomyelitis in Massachusetts 1907-1929 F C Fordick and F H Luther New York—p 1115
Early Diagnosis of Pregnancy Zondek Aschheim Test B Parvey Boston—p 1121
Patient's Reaction to Diagnosis of Tuberculosis L R Williams and A M Hill New York—p 1129
Two New Clamps for Abdominal Panhysterectomy L E Phoebe Boston—p 1131
Useful Tongue Depressor J F Quincy Boston—p 1137
Methods and Results of Diabetic Treatment F M Allen Morrisville N J—p 1143
Pneumia in Children R W Robinson Laconia N H—p 1139
Prevention of Disease Applications of Preventive Medicine E O Guxley N H—p 1143

Anterior Poliomyelitis in Massachusetts, 1907-1929—Forsbeck and Luther state that in Massachusetts there has been little change in the case rate and mortality rate during the past twenty-three years. The relationship between mortality rate and case rate has not been marked. There is apparently a periodicity in the incidence of poliomyelitis and evidently the fatality rate is higher for years of high mortality. The seasonal distribution for poliomyelitis is similar to that for the U S registration area, the peak occurs in September. There is apparently no relationship between time of the peak and the size of the year's incidence. There is now a tendency for the peak to occur later in the year than formerly. The large number of cases studied shows a ratio of about seventy seven females to every hundred males. This discrepancy is even greater during adolescence. There is a significant relationship between age of incidence and density of population, the cases occurring somewhat later in life in rural communities. However, there is apparently no significant difference in the case rate in rural and urban communities. Since 1918 there has been a striking change in the age distribution of poliomyelitis as a whole. The number of cases in the age group 0-4 has markedly decreased, while there has been a compensatory increase in the relative number of cases in the age group 5-14. The percentage of cases in adult life has remained quite constant.

Early Diagnosis of Pregnancy Zondek-Aschheim Test—Parvey has applied this Zondek-Aschheim test in the study of 191 patients in private practice. The results were in full concordance with the claim of Zondek and Aschheim. In every case the test checked with the clinical observations. In a few instances false reactions were obtained at first but these were regularly proved, on repeated examinations to be the results of error in technique. It has been shown that in the latter months of pregnancy, morning urine must be used because of the diminishing concentration of the hormone at this period. The test becomes negative in abortion and ectopic gestation after separation of the fetus from the maternal circulation.

Radiology, St. Paul

16 1110 (Jan.) 1931

- Recent Progress in Roentgen Ray Standardization L S Taylor Washington D C—p 1
Roentgenologic Appearance of Interlobar and Mediastinal Encapsulated Effusion in Thorax E Freedman Cleveland—p 14
Roentgenologic Aspect of Various Types of Colonic Diverticula W O Upton and A E McGregor Battle Creek Mich—p 30
Juggled Direct Reading Ionizationmeter of High Sensitivity I P Delassio and A H Warner Los Angeles—p 39
Roentgen Treatment of Menorrhagia of Menopause and Uterine Fibroids 100 Cases L J Carter Brandon Minn—p 44
Deep Roentgen Treatment of Chronic Gonorrheal Infection in Female C M Henry Regina Sask—p 47
Effect of Roentgen Ray on Thyroid and Parathyroid Glands O M Walters B J Anson and A C Ivy Chicago—p 52
Tumor Involving Lymphoid Tissue D S Childs Syracuse N Y—p 59
Intussusception C F Weaver Detroit—p 64
Double Gallbladder with Double Cystic Duct R Hayes Longview Wash—p 66

Surgery, Gynecology and Obstetrics, Chicago

52 1128 (July) 1931

- Mixed Tumors of Kidney in Infancy and Childhood Seventeen Cases
H L Kretschmer and W C Hibbs Chicago—p 1
- *Effect of Cervical Paravertebral Anesthesia on Pulse Rate During
Operations on Toxic Thyroid Gland A Brown Omaha—p 25
- *Perivaginal Fascia in Nullipara B H Goff New York—p 32
- *Craves Constitution (Warthin) C A Hellwig Wichita Kan—p 43
- *Corpus Luteum of Pregnancy Persistence of Pregnancy After Excision
of Corpus Luteum in Early Weeks M Douglass Cleveland—p 52
- *Hormone Test for Diagnosis of Early Pregnancy One Hundred Cases
P F Schneider Evanston—p 56
- Cause of Death in Liver Autolysis E Andrews and L Hrdina Chicago
—p 61
- Juxtaepitropeal Route in Operative Treatment of Fracture of Mal
leolus with Posterior Marginal Fragment J Cuthler Paris—p 67
- Technic of Complete Breast Operation E I Bartlett San Francisco
—p 71
- Management of Stone in Solitary Kidney and Ureter C P Mathe
San Francisco—p 79
- *Treatment of Prepatellar Bursitis Twenty Seven Cases L Carp
New York—p 87
- Biliary Tract Visualization with Radiopaque Oils R H Overholt
Philadelphia—p 92
- *Ovarian Pregnancy R R Cranmer Minneapolis—p 98
- Submucous Lipomata of Gastro Intestinal Tract Twenty Eight Cases
M W Comfort Rochester Minn—p 101

Effect of Cervical Paravertebral Anesthesia on Pulse Rate During Operations on Toxic Thyroid Gland—Cervical paravertebral anesthesia in addition to anesthetizing the upper cervical nerves, anesthetizes the upper cervical sympathetic ganglion and the upper part of the sympathetic cord. This anesthetization renders the superior and middle cervical cardiac nerves incapable of transmitting to the heart the increased accelerator impulses caused by the hypersensitization of these nerves, and the moderator impulses of the vagus reach the heart opposed only by the accelerator impulses through the lower cervical and upper thoracic cardiac branches of the sympathetic, which are usually not strong enough to overcome the vagus action completely and the pulse rate falls. Consequently, says Brown during the operation of subtotal thyroidectomy for hyperthyroidism cervical paravertebral anesthesia exerts a definite action toward slowing the rate of the pulse. Owing to the fact that under paravertebral anesthesia cardiac shock is less marked, the operative procedure does not diminish the patient's already weakened cardiac reserve and the postoperative course is smoother with relatively less cardiac reaction than with other types of anesthesia.

Perivaginal Fascia in Nullipara—Goff states that in the normal nullipara there is no tissue in the walls of the vagina, urethra, bladder and rectum which can logically be termed fascia, if the classic histologic descriptions of the tissues are observed. There is no fascia between the anterior vaginal wall and the wall of the urethra. There is a thin layer of fascia of the areolar type between the anterior vaginal wall and the wall of the bladder. There is a similar layer of areolar fascia between the posterior vaginal wall and the wall of the rectum. The layer of areolar fascia that separates the anterior vaginal wall from the wall of the bladder (vesicovaginal fascia) and the layer of areolar fascia that separates the posterior vaginal wall from the wall of the rectum (retrovaginal fascia) unite at the sides of the vagina to form the perivaginal fascia, which is a part of the fascia endopelvina. The areolar character of the fascia that separates the vaginal wall from the walls of the bladder and rectum makes it impossible to dissect it as an individual layer, and as such to use it in vaginal plastic operative procedures. If used at all, it must be used in conjunction with the overlying wall of the vagina. There is no fascia other than the areolar perivaginal fascia available for use in the surgical correction of cystocele and rectocele. The successful surgical correction of cystocele, rectocele and urethrocele depends on the utilization of the tissues of the vaginal wall rather than on the use of the fragile areolar fascia that surrounds it. When using the term fascia in descriptions of vaginal plastic operations it is important to stress the fact that the fascia referred to is not of the dense type such as is the sheath of the rectus muscle, but that it is of the loosely arranged areolar type. It is apparent that many gynecologists have applied the term fascia to the muscular coat of the vaginal wall which is situated just beneath the vaginal mucosa because it somewhat resembles a layer of dense fascia in its gross appearance. It is obvious that such use of the term fascia is

not in accord with classic histologic description of the tissues which constitute the vaginal wall. The abandonment of an inaccurate terminology, which is based on the gross appearance of the tissues, and the adoption of one based on the established histology of the tissues in and about the walls of the vagina, urethra, bladder and rectum, will lead to a clearer common understanding of the problems of cystocele, rectocele and urethrocele, and will facilitate the teaching of vaginal plastic surgery.

Graves Constitution—Warthin's and Simpson's theory that in exophthalmic goiter the thyroid gland is not the chief pathogenic factor but an incidental complication and sequela to a constitutional anomaly, is not confirmed by Hellwig's study. The most important histologic criterion of exophthalmic goiter, as far as the thyroid itself is concerned is not the presence of hyperplastic lymph follicles throughout this gland. Of his cases of exophthalmic and toxic goiter only 66 per cent presented lymphoid tissue in the thyroid gland and of the cases without clinical symptoms of thyrotoxicosis 38.5 per cent showed lymphocytic infiltration. In the typical cases of status thymico-lymphaticus, the thyroid gland was free from lymphocytes. Lymphocytic infiltration of the thyroid is not a manifestation of an underlying constitutional anomaly but is a purely local response to hyperplasia and hypersecretion of the gland. Hellwig's observations are in complete agreement with the theory of Moebius that hypersecretion of the thyroid gland is the essential cause of exophthalmic goiter.

Corpus Luteum of Pregnancy—The evidence offered by a case cited by Douglass allows him to state with some assurance that in the human being pregnancy is independent of the hormone supplied by the corpus luteum of pregnancy once its duration exceeds approximately four to six weeks.

Hormone Test for Diagnosis of Early Pregnancy—In Schneider's experience in 100 cases the Aschheim-Zondek test has shown its value effectively in the immediate differentiation of early pregnancy from such conditions as menstrual irregularity due to other causes, delayed return of menses following pregnancy and pelvic masses simulating pregnancy. The rapid disappearance of the hormone after delivery, and the persistence of the reaction following incomplete abortion or death of the fetus, indicate that future investigation may prove the test of value in the diagnosis of retained decidua, tissue following labor or incomplete abortion. The question of the diagnosis of ectopic pregnancy, hydatidiform mole and chorio-epithelioma has not been encountered in this series.

Treatment of Prepatellar Bursitis—Twenty-seven consecutive acute or chronic cases of prepatellar bursitis ("house maid's knee") were studied by Carp to determine the end results of conservative therapy. This consisted in aspiration of the fluid, injection of several cubic centimeters of half strength tincture of iodine into the sac, vigorous massage over the bursa, reinforced adhesive strapping over the sac with the knee in complete extension and the application of a firm pressure bandage over the knee. The cases were preponderant in housewives. About 65 per cent of the patients gave a history of trauma. About one third of the patients complained of pain. Swelling of the bursa appeared either immediately after the trauma or after days, weeks or months. The character of the aspirated fluid depended on the length of time it took for accumulation. In the early cases it was bloody, in the later cases amber or straw colored. Aerobic and anaerobic cultures in eleven cases were sterile. In a little more than half the cases small amounts of fluid reaccumulated in an average time of ten days. Aspiration of this fluid was employed. A second injection of tincture of iodine in these cases was usually not necessary. An average follow up of sixteen months in twenty-four out of the twenty-seven cases showed no symptoms or reappearance of bursal fluid. In twenty of the twenty-four follow up cases the average time for complete disappearance of the fluid was about three weeks.

Ovarian Pregnancy—All of Spiegelberg's criteria were fulfilled in Cranmer's case. The tube on the affected side was intact, the sac occupied the position of the ovary, it was connected to the uterus by the utero-ovarian ligament and ovarian tissue was found completely surrounding the sac.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Anaesthesia, Manchester

8 41 90 (Jan) 1931

- *Blood Pressure in Avertin Anesthesia W P Kennedy—p 52
*Influence of Ether on Toxicity of Procaine Hydrochloride R Perez Cordera—p 67

Blood Pressure in "Avertin" Anesthesia—A series of 150 cases of Avertin anesthesia were observed by Kennedy, with especial reference to the changes on blood pressure. These were found to be greater than previously reported and greater than would commonly be considered safe. At the same time no untoward results were observed, and similar changes are reported in young men exposed to very high external temperatures. From the experiences of the series the conclusion is drawn that Avertin provides an advance in anesthetic practice of prime importance.

Influence of Ether on Toxicity of Procaine Hydrochloride—On the basis of experiments on animals, Perez-Cordera states that no alteration in the toxicity of procaine hydrochloride administered intravenously is found if ether is given afterward. A large increase in its toxicity is found if the procaine is administered intravenously after etherization. The increase in toxicity falls rapidly with increase in the time between etherization and administration of procaine. The average fatal dose without ether in mice is 0.09 Gm per kilogram. The average fatal dose with ether is 0.025 Gm. The lethal dose for cats with ether, is about 0.04 Gm. The lethal dose for cats, without ether, is about 0.05 Gm. In cats, intravenous injection of procaine causes a marked effect on respiration which is coincident with a fall in blood pressure. It would appear that ether does not cause any change on the sort of action of procaine.

British Journal of Children's Diseases, London

27 245 332 (Oct-Dec) 1930

- *Postvaccinal Encephalitis in Infancy T F M Scott—p 245
*One Hundred Cases of Failure of Breast Feeding in First Month H W Pooler—p 269
*Specificity of Hemolytic Streptococcus Associated with Scarlet Fever T Toyoda, J Morioka, Y Futagi and S Hoshizaki—p 282
*Sublingual Mumps with Edema of Tongue J H R Harries and E C Benn—p 293
Pyonephrosis as Complication of Typhoid J Wright—p 296

Postvaccinal Encephalitis in Infancy—A new case of postvaccinal encephalitis in infancy is recorded and twenty one other cases are quoted by Scott. These cases are shown to fall into five clinical groups, whose symptomatology is described. The cerebrospinal fluid is found to be normal in almost every case. There was no particular day after vaccination on which the bulk of cases occurred. The postmortem examination of one case and the typical pathologic picture are described. The differential diagnosis is discussed. The prognosis is shown to depend considerably on the clinical form of the disease. The extreme rarity of this disease in infancy as compared to other ages is illustrated by statistics. The etiology in general is discussed. The relative immunity in infants is discussed and a suggestion is made that family history may be of value in forecasting the liability of the infant to the disease.

Failure of Breast Feeding in First Month—The conclusion Pooler draws from this examination is that the real deciding issue in the whole of these cases was the return of the mother to her domestic duties and worries. There were other conditions which might have caused some trouble but he regards them as auxiliary only in bringing about the early weaning in this group. To some extent he has had to revise the views he expressed in 1928. A longer rest in bed was not effective in three cases. The effects of poor feeding of the mother and the disturbance of the baby's nervous system do not loom large in the analysis. Too frequent feeds seem to be sometimes a result rather than a cause of failure. He does not, however, ignore their influence while stressing the dominant importance of the early return of the mother to her domestic duties.

Hemolytic Streptococcus Associated with Scarlet Fever—From the study of ninety seven strains of these organisms Toyoda et al reach the conclusion that neither morpho-

logically, biologically nor serologically can the scarlet fever streptococci be regarded as possessing a specificity that distinguishes them from other hemolytic streptococci.

Mumps with Edema of Tongue—Harries and Benn report two cases in which solitary sublingual mumps produced a high degree of edema of the tongue. They have not seen the condition before nor have they been able to trace any previously recorded examples in the literature. The tongue of one of the patients was noted to be greatly swollen, protruding from and filling the mouth. The appearance of the tongue was otherwise normal. It was not inflamed but simply much enlarged. When the tongue was raised, the floor of the mouth was seen to be edematous. Both sublingual salivary glands were swollen and tender. There was a moderate amount of enlargement and tenderness of the submental lymph nodes. By exercising considerable pressure on the dorsum of the tongue, it was found to be possible to obtain a momentary view of the palate and fauces. Nothing abnormal was seen. Examination equally difficult, of the buccal mucosa revealed well marked bilateral papillitis of the orifice of Stensen's duct. Similar changes were noted in the other patient.

British Journal of Radiology, London

4 148 (Jan) 1931

- Training in Radiography J D White—p 22
Unusual Case of Bronchiectasis J A Sparks—p 30
New Kind of Rays W C Röntgen—p 32

British Medical Journal, London

1 81 124 (Jan 17) 1931

- Zoster Varicella and Encephalitis W R Brain—p 81
*Treatment of Pernicious Anemia with Hog's Stomach 108 Cases J F Wilkin—p 85
Removal of Adenoids Simplified Technique O Popper—p 97
Chorea of Blood Sugar Method for Clinical Work F K Herbert and M C Bourne—p 94

Treatment of Pernicious Anemia with Hog's Stomach—Wilkinson states that relapses did not occur in any of 108 patients with pernicious anemia treated with fresh and desiccated preparations of hog's stomach tissues. All the patients have done well. This treatment has given highly satisfactory results undoubtedly better than with liver, while the relative effective dose is less than the dose of liver. More than 92 per cent of the patients treated with hog's stomach are perfectly well and the majority are doing their full time work. A further 6 per cent are much improved but still suffer from varying degrees of nervous impairment. Hog's stomach therapy is superior to liver diet in the speed of remission of the condition, the erythrocytes and hemoglobin increasing 157 per cent and 94 per cent respectively, compared with 90 per cent and 77 per cent, respectively with liver under comparable conditions. Clinically, the immediate results are similar to those obtained with liver. They are more prompt and the normal health is reached more quickly, work is resumed sooner and all the gastro-intestinal symptoms appear to be relieved. This is not always the case with liver treatment. Hydrochloric acid and pepsin being frequently required in addition to relieve the indigestion, flatulence and occasional sore tongue. Achylia gastrica persists despite the treatment. Hydrochloric acid and pepsin do not appear to be necessary for the relief of symptoms with this form of treatment. There is a minimum dose of hog's stomach to maintain the normal health of each patient. Regular blood counts are essential for the control of this dose. Fresh hog's stomach can be taken in adequate doses for a few days every three to four weeks with a maintenance of normal health. Several cases with early posterolateral involvement of the spinal cord have shown remarkable improvement, and paresthesias of the hands and feet (with out alteration of reflexes) have been almost completely cured in nearly every case. These have always been the symptoms most resistant to treatment.

Edinburgh Medical Journal

38 172 (Jan) 1931

- *Local Vascular Changes in Splenic Anemia J McMichael—p 1
Care of Surgical Diabetic A R Gilchrist—p 30
*Dehydration in Intestinal Obstruction G Miller—p 47

Local Vascular Changes in Splenic Anemia—Sixteen spleens from cases of splenic anemia were examined by McMichael. These were principally cases of hepatolienal

fibrosis, but spleens from Egyptian splenomegaly, tuberculosis of the spleen, hemolytic jaundice and some other unclassified types also were examined. In addition, some experimental work has been carried out with regard to obstruction of the splenic vein and the organization of hemorrhages in the spleen. He found that hyaline degeneration of the pulp arteries is a common occurrence after the age of 10 years. It is probably related to involution changes in the lymphoid tissue in the spleen and has no pathologic significance. Endophlebitis of the splenic vein is difficult to detect in its early stages. It is probably determined by raised portal blood pressure, calcification and thrombosis being secondary phenomena. Thrombosis of the splenic vein is not a direct cause of the splenic anemia complex. The siderotic nodules in the spleen are the end-result of periarterial hemorrhages which take origin from the ellipsoidal capillaries. One important factor in the causation of these hemorrhages is congestion of the spleen. This may be determined by arterial hyperemia or by raised venous pressure. It is probable that the periarterial fibrosis of Banti has its origin in the same perivascular hemorrhages. In the cases of hepatolienal fibrosis there was a constant relationship between siderotic nodules and hematemesis. It seems highly probable that both the hematemesis and the siderotic nodules in these cases result from increased portal blood pressure.

Care of Surgical Diabetic Patient.—The nature of the metabolism of the diabetic patient is described by Gilchrist in order to show how acidosis is produced. An improper diet, lack of food, anesthesia and infection all predispose to the production of acidosis. The appropriate treatment and prevention of this condition is outlined. Emphasis is placed on the important part played by sepsis in antagonizing the action of insulin, in precipitating acidosis and in being a frequent accompaniment of diabetic coma. The use of insulin and dietary measures to combat the production and excretion of ketone bodies are described in detail. Postoperative diets that have been found useful in a number of conditions are given. The response of a case of diabetic gangrene to dietetic and insulin treatment is recorded.

Dehydration in Intestinal Obstruction.—Experiments have been carried out by Miller to show the difference in the fluid content of the organs of normal animals and of those dying from intestinal obstruction. On the basis of his observations he asserts that, in high simple obstruction in dogs, death is caused by loss of intestinal secretion causing dehydration and loss of sodium and chloride ions. Only the blood plasma and interstitial fluid are lost. The intracellular fluid is maintained by an ionic concentration consisting mainly of phosphoric acid and potassium. These are not lost in the gastro-intestinal secretion and so dehydration does not impair the intracellular fluid.

Lancet, London

1 61 114 (Jan 10) 1931

Celiac Disease L C Parsons—p 61

*Clinical Conditions Associated with Achlorhydria J F Wilkinson and T H Oliver—p 66

Cranial Blood Pressure Records J F H Dally—p 71

Nembutal as Basal Hypnotic in General Anesthesia I W Magill—p 74

Clinical Conditions Associated with Achlorhydria.—Wilkinson and Oliver assert that they have evidence that an association exists between a gastric secretory disturbance and certain clinical conditions (excluding such well known diseases as pernicious anemia). A hundred cases have been examined and they fall naturally into five groups. Group 1 is a definite clinical entity characterized by gastro-intestinal disturbances and recurrent diarrhea, flatulent dyspepsia and neurasthenia are prominent symptoms. The clinical picture is sufficiently characteristic to allow the diagnosis of achlorhydria to be made with considerable certainty. There were fifty three cases. Twenty five showed achylia gastrica and eighteen hypo-acidity (eight with deficient peptic activity) on examination by fractional test meal. Group 2 comprises twenty five cases in which the prominent feature was a sore tongue or an ulcerative stomatitis. The gastro-intestinal disturbances encountered in group 1 may or may not be present. Fractional gastric analysis showed that nine of these patients had achylia or hypochlorhydria (only one having a normal peptic activity) seven with a normal acidity (four with

reduced peptic activity) and three with hyperacidity. In group 3, five patients complained of skin lesions in addition to the gastro-intestinal or glossitic symptoms, while one other had an urticaria and angioneurotic edema. Achylia was present in four, hypo-acidity in one and hyperacidity in one of the cases. In group 4, five cases of rheumatoid arthritis were examined, one, associated with diarrhea, presented hypo-acidity, while in four with histories of glossitis, three presented achylia and one hypo-acidity. Group 5 comprised ten cases of debility with degrees of secondary anemia, for which no cause could be found. Four patients had achylia and four had hypochlorhydria.

Annales de Medecine, Paris

28 201 396 (Oct) 1930

*Semeiology of Thoracic Pain Pain Provoked by Stomach Syndrome E Rist—p 201

Anatomoclinical Study of Primary Cancer of Lung Case E Rist and J Rolland—p 231

Morphologic Study of Allergic Field in Pulmonary Tuberculosis E Rist, Doubrow and R Froment—p 310

*Simultaneous Bilateral Pneumothorax E Coulaud—p 320
Nontuberculous Tracheal Hemorrhages A Soulas—p 382

Semeiology of Thoracic Pain Pain Provoked by Stomach Syndromes.—After reviewing the literature on the subject, Rist cites personal clinical observations that show the extreme importance of a correct interpretation of the existence of thoracic pain. When such pain is the only symptom, it rarely indicates disturbances in the intrathoracic respiratory organs, on the contrary, it is rather a warning to discard such an interpretation for the thoracic pain that accompanies diseases of the thoracic organs is usually merely one of several more specific symptoms. The monosymptomatic thoracic pain in question is usually a referred pain produced by lesions in other parts of the body, particularly the stomach and duodenum. Among eighty seven cases of thoracic pain of gastric origin observed during one year seventy one times the thoracic pain was localized on the left side. The explanation for this phenomenon is not certain; however, it possesses a certain pathognomonic value in determining the gastric origin of the pain in such cases. The cases observed by the author all concerned patients who had come to the clinic because of a false diagnosis of tuberculosis suggested by the thoracic localization of the pain. In fifty-one of the eighty-seven cases the cause was gastric ptosis, the pain being usually localized in the left interscapulo-vertebral space corresponding to the fifth to the eighth thoracic segments though it sometimes occurs also at the base of the neck and above the infrapinnous fossa toward the anterior portion of the trapezius, the pain being transmitted to the third, fourth and fifth cervical segments by the phrenic nerve. Another important cause of thoracic pain was found to be gaseous distention of the stomach from aerophagy, often caused by swallowing movements made to free the rhinopharynx of pathologic secretions. The pain in such cases is observed in the same region as that produced by gastric ptosis. A third gastric disturbance in which the pain is referred to the thoracic region is medicamentous gastritis. This was especially noticeable in the cases under discussion since in all of them the presence of tuberculosis had been suspected and drugs had often been prescribed that are notably harmful to the stomach, such as creosote, tincture of iodine and various proprietary preparations. The author feels that the facts presented here are sufficient to show how often thoracic pain indicates disturbances in the abdominal organs, especially gastric lesions when the pain is on the left side.

Simultaneous Bilateral Pneumothorax.—Coulaud gives the results in 116 cases in which he used simultaneous bilateral pneumothorax. In 67 cases a unilateral pneumothorax was already present and the second pneumothorax was established after the tuberculous lesions had become bilateral. In 49 cases the double pneumothorax was established from the beginning. Of the 116 patients 67 died and 49 either were living at the time of writing or had died of a disease other than tuberculosis, 19 were definitely cured. Death was due in 4 cases to accidental causes (cardiac disturbances, pneumonia and traumatic perforation) before the pneumothorax treatment was completed. Intestinal tuberculosis was responsible for 14 deaths. The author points out however that this was an additional extrapulmonary localization of the tuberculous condition rather

than an unfavorable result of the pneumothorax. In 49 cases death was the result of the progression of the pulmonary tuberculosis in the collapsed lungs, with or without spontaneous pleuropulmonary perforations or severe hemoptysis. In 28 of the 49 cases the collapse itself was found to be inadequate. Since the collapse was good in all the cases in which the patients were cured it seems logical to conclude that a poor collapse means failure of the treatment. The twenty-one cases in which death occurred from progressive pulmonary lesions in spite of a good collapse present a more serious problem. However, all the 116 cases were severe ones, most of them of long standing and there must necessarily have been a number of patients without sufficient natural resistance to permit of a cure even with the aid of the therapeutic pneumothorax. From his observations the author believes that a bilateral pneumothorax when a unilateral pneumothorax is already established, is indicated beyond a doubt in the presence of cavities in both lungs. Definite contraindications to such treatment are the existence of an imperfect collapse on the side of the first pneumothorax, early bilateral nodular tuberculosis and the existence of a serious extrapulmonary tuberculous localization. Establishment of a simultaneous bilateral pneumothorax at the beginning is indicated in cases of bilateral cavity formation and of involvement of both lungs. It is contraindicated by extensive nodular tuberculosis predominating on one side and by extensive caseous tuberculosis. The author describes the method of treatment used and the complications encountered.

28 397 500 (Nov. 1930)

- *Spontaneous Cure of Tuberculous Pulmonary Caverns H. Wohlers—p. 397
Pulmonary Syndromes of Physiologic Sections of Spinal Cord L. Cornil—p. 453
A. Hamant and M. Mosinger—p. 453
Congenital Hyperthermia J. Trossier—p. 480
Hypotensive Action of Certain Organic Extracts R. Fontaine and A. Juné—p. 483

Spontaneous Cure of Tuberculous Pulmonary Caverns—Wohlers points out that the possibility of spontaneous cure of tuberculous pulmonary caverns depends largely on the mechanical conditions governing their evolution. From this standpoint he differentiates the following three classes of caverns as a guide to prognosis and treatment: 1. Caverns of the first class with soft walls, of recent formation, localized in the middle portion of the lung and surrounded by a pulmonary parenchyma only slightly infiltrated, indicate an excellent prognosis and are usually cured spontaneously and quickly by a simple rest cure. A therapeutic pneumothorax is rarely justified in such cases. 2. Caverns of the second class, the walls of which offer little true resistance, of recent formation, localized at the apex or near the hilus, or surrounded by abundant infiltrations, present a less favorable prognosis. The author recommends that a rest cure be tried for at least two or three months. If spontaneous cure does not result, a pneumothorax may then be established. 3. Caverns of the third class with sclerosed walls, formed of a semicartilaginous shell in extreme cases, or of an unfavorable localization at the base of the lung, or of unusual size, generally necessitate surgical intervention according to the exigencies of the particular conditions. The author cites twenty-nine of the many cases of pulmonary caverns on which his conclusions are based.

Presse Medicale, Paris

38 1529 1552 (Nov. 12) 1930

- Hormonal Duality of Glycoregulatory Internal Secretion of Pancreas D. Sautenaise—p. 1529
*Pancreatic Fistula with Reingestion of Pancreatic Fluid and Pancreaticogastrostomy J. Cathala and J. Senéque—p. 1534
Antiviral Therapy in Gonococcal Infections A. Bass—p. 1537

Pancreatic Fistula with Reingestion of Pancreatic Fluid and Pancreaticogastrostomy—Cathala and Senéque report a case in which an attack of acute pancreatitis was followed by an adventitious cyst with intracystic hemorrhage. The cyst was punctured and about 4 liters of hemorrhagic fluid was withdrawn. It was then affixed to the abdominal wall by marsupialization. The fistula thus established was well tolerated by the patient for a few days. However, the discharge of pancreatic juice persisted and after a time the patient lost weight and began to grow markedly weaker. Injections of atropine and other medical treatment were of no avail. The

fistula did not heal. A pancreaticogastrostomy seemed advisable but because of the general condition of the patient there was considerable doubt as to the safety of a serious operation requiring general anesthesia. In a day or two the fistula closed and the patient complained of severe pain. Catheterization of the fistula night and morning relieved the pain, the average amount of fluid removed was about 250 cc. For almost two weeks the patient drank each day the pancreatic fluid removed from the fistula. The effects were striking: increase in weight, disappearance of vomiting and digestive disturbances and general increase in physical vigor. A pancreaticogastrostomy was then made with excellent results. The authors feel that the reingestion of pancreatic fluid should be practiced from the first establishment of fistulas of this nature in order to avoid the serious general symptoms that developed in this case. If after four or five months the fistula does not heal spontaneously the patient is then in a proper condition to support an operation.

78 1625 1640 (Nov. 29) 1930

- Absence of Bacteriolytic Properties in Pleural Fluids Discharged in Course of Artificial Pneumothorax F. Bezançon and E. Buc—p. 1625
Case of Pyopneumothorax Secondary to Hydatid Cyst of Lung P. Hillebrand, P. Chêne and F. Soules—p. 1626
Abdominolumbar Transfusion in Acute Pancreatitis F. Odj—p. 1627
Antipneumococcal Serotherapy R. Mignot—p. 1630

Absence of Bacteriolytic Properties in Pleural Fluids Discharged in Course of Artificial Pneumothorax—Bezançon and Buc performed a series of experiments to determine whether bacteriolytic properties exist in the fluids discharged in the course of tuberculous pleurisy or in the discharges from artificial pneumothorax. Examination of the discharges from artificial pneumothorax revealed the presence of tubercle bacilli in twenty-two cases out of twenty-four. Inoculation of guinea pigs with these fluids produced tuberculosis in every case. After about two months, however, the virulence of the bacteria was diminished and it finally disappeared entirely. The disappearance of the virulence was not due, however, to the presence of bacteriolytic properties in the fluids, since it was shown experimentally that an emulsion of tubercle bacilli in physiologic solution of sodium chloride, kept in a water bath at a temperature of 37°C, also lost its virulence in about the same length of time. The seemingly curative effect of pleural discharge on tuberculous lesions must therefore be due to some factor other than the presence of bacteriolytic powers in the fluids themselves.

Revue Medicale de la Suisse Romande, Lausanne

50 753 816 (Nov. 25) 1930

- Antidiphtheria Vaccination in Zones of Infection J. Pelet—p. 753
*Influence of Heredity on Tuberculosis J. Stephani, Cherbuliez—p. 761
Sweetened Condensed Milk and Dental Caries J. Tailleur—p. 770
Pyrethrum and Pyrethrins as Anthelmintics B. Witz—p. 773
Deep Electronization by Monopolar High Frequency Apparatus P. Rœthlisberger—p. 777
Three Cases of Undulant Fever J. Knecht—p. 781
Treatment of First Stages of Poliomyelitis P. Gautier—p. 793

Influence of Heredity on Tuberculosis—From personal observation of 1,017 patients with tuberculosis Stephani, Cherbuliez ascertained that 823 of the patients were descended from healthy parents while only 194 were of tuberculous parentage. The disease as a rule appeared earlier in the descendants of tuberculous parents. Among the descendants of healthy parents the severe chronic forms or fatal forms of tuberculosis predominated while among the descendants of tuberculous parents the benign forms were by far the most numerous. The author's results confirm those of previous investigations a number of which he cites.

Schweizerische medizinische Wochenschrift, Basel

60 1121 1144 (Nov. 29) 1930

- *Injuries of Eyes Caused by Radiant Energy A. Vogt—p. 1121
Koentgen Studies of Gastric Mucous Membrane H. H. Berg—p. 1127
Etiology and Clinical Aspects of Diabetes Mellitus Juvenilis T. Baumann—p. 1129
Syphilis with Resistance to Arspenamine Mercury and Bismuth J. Wyler—p. 1133

Injuries of Eyes Caused by Radiant Energy—Vogt directs attention to the fact that sunlight as well as artificial light under certain conditions may cause temporary or permanent injuries of the eyes. It has long been known that looking

into the sun, which is often done during solar eclipses, is followed by temporary or permanent scotoma. The author found that this injury is mainly due to an injury of the macula lutea by burning of the pigment epithelium and the neuro epithelium by the infra-red rays. Another injury caused by sunlight is the snow blindness developing in the high mountains. This is caused by ultraviolet radiation, which injures especially the corner and the conjunctiva. Glass blowers' cataract, the pathogenesis of which was not entirely clear until recently, is caused by infra red radiation. In regard to roentgen injuries of the eye it is stated that they become noticeable either shortly after the irradiation or after a longer interval. The author advises against the treatment of blepharitis with small doses of roentgen rays because this disturbance usually yields to medicinal therapy, and although roentgenologists assert that small doses of roentgen rays are not injurious to the eye the late effects on the lens cannot be definitely denied. Injury of the eye may also be caused by radium rays. It is similar to that caused by roentgen rays.

Policlinico, Rome

37 521 576 (Nov. 15) 1930 Surgical Section

- *One Hundred Cases of Perforation of Gastric or Duodenal Ulcer G. Barbera—p. 521
Obturator Hernia G. Canavero—p. 541
Renal Echinococcus Case L. Mollo—p. 557
Mucocoele and Pseudomyxoma of Peritoneum of Appendicular Origin L. Sussi—p. 568

One Hundred Cases of Perforation of Gastric or Duodenal Ulcer—Barbera describes 100 cases of perforated gastric and duodenal ulcers. In the majority of cases the classic syndrome of acute gastric perforation, the excruciating pain especially in the epigastric region and the marked rigidity of the whole abdominal wall was manifested. Less frequently the secondary signs were noted. In 82 cases of the 100 the diagnosis was accurate, and direct intervention was applied to the stomach. In eleven cases a diagnosis of appendicitis was found wrong at operation. It became necessary to continue the operation higher up when it was found that a gastric lesion was involved. In sixty-nine cases the operation was performed under general anesthesia (in sixty-three cases ether was employed, and in six cases chloroform). In seventeen cases local anesthesia with procaine hydrochloride and morphine was used, and in thirteen cases spinal anesthesia with procaine hydrochloride or tutocain. Xipho-umbilical laparotomy is the preferred form, as it allows the exploration of the stomach and the duodenum and permits the easy execution of gastro-enterostomy. The right transrectal operation is advantageous when the diagnosis 'duodenal ulcer' is assured. There were forty-four deaths and fifty-six recoveries. Of the sixty cases in which the operation was performed within twelve hours, only twelve, or 20 per cent resulted fatally. Of the thirty-five cases in which it was performed between the twelfth and the forty-eighth hour or beyond thirty-one resulted fatally, or 88.7 per cent. All statistics agree in making twelve hours the dead line for a favorable prognosis. Of the three quinquenniums the mortality was 56.25 per cent in the first, 48.2 per cent in the second and 38.6 per cent in the third.

Rivista di Clinica Pediatrica, Florence

28 937 1080 (Nov.) 1930

- Experimental Histologic Contributions in Experimental Syndromes Induced by Deficiency of Vitamins D and A in Young Animals V. Nava—p. 937
Electrocardiogram of Healthy Child C. Halfer—p. 959
*Epidemiologic Notes on Acute Anterior Poliomyelitis in Genoa in 1929 G. Magliano—p. 966
*Still's Disease and Chronic Polyarthritides in Children A. Gentili—p. 1017
*Prophylaxis of Measles with Normal Horse Serum P. Mazzotti—p. 1049

Electrocardiogram of Healthy Child—Halfer studied the electrocardiographic records of the healthy child in ten boys and girls in the consultation center of the Clinica pediatrica. The youngest was 15 months of age and the oldest 9 years. The records were all taken with the same apparatus (the Siemens in the Clinica medica). From his examination of the records, Halfer concludes that the electrocardiogram of the healthy child is widely differentiated. It presents a progressive

increase of all the positive waves. The P-R interval after the third year of life becomes normal. The deflection R increases steadily until it attains the height observed in the adult. Deflection S is not very deep. Deflection T is variable. In half the cases, and especially in children less than 3 years of age, there was right ventricular predominance, in the others there was an equilibrium between the two ventricles.

Epidemiologic Notes on Acute Anterior Poliomyelitis in Genoa—Magliano, after reviewing rapidly the bibliography of infantile paralysis with regard to the pathologic anatomy, etiology, clinical aspects and epidemiology, describes in a general way 134 cases of poliomyelitis diagnosed in the community of Genoa. He then discusses at length the epidemiology and contagiousness of the disease from various points of view and reaches the following conclusions. Early diagnosis is difficult. It is difficult to determine exactly the period of incubation. He regards the phenomenon of a 'convulsive attack' as a prognostic symptom of grave paralysis or fatal outcome. Slight importance is to be attributed to the economic factor and to the state of nutrition of the patients in relation to the morbidity. The author accepts what has been brought out by other authors with regard to the greater incidence of the disease among males, and in persons of a certain age and at certain seasons. He does not assign much importance as regards transmission of the disease, to animals in general, to blood parasites or to infected objects. Contagion is easy, but the disease is not contracted readily. Great importance is attached to carriers. Absence of multiple contagions in the same family, even in the presence of proved contacts is emphasized. He admits that the virus is introduced through the nasobuccal mucosa or through the digestive tract and accepts the existence of an organic predisposition to the disease.

Still's Disease and Chronic Polyarthritides in Children—Gentili, after general remarks on chronic polyarthritides in children which still constitutes, he admits, an obscure chapter in infantile diseases, describes four cases of Still's disease. This is a peculiar type of chronic polyarthritides in children, especially rare in his region which is always accompanied by enlargement of the spleen a generalized hypertrophy of the lymph nodes and often hepatomegaly. All these symptoms were evident in the four children under discussion. In regard to autonomy of this disease type which is often discussed, he holds that Still's disease from the nature of its peculiar clinical character should be differentiated from the ordinary picture of chronic infantile polyarthritides.

Prophylaxis of Measles with Normal Horse Serum—Mazzotti endeavored to ascertain whether the prophylaxis of measles such as was obtained by Pontano in healthy children by the use of normal horse serum could be secured likewise in sick hospitalized children with a view to arresting a grave hospital outbreak. Two experiments were carried on simultaneously in 1929 in the pediatric clinic and in the Bambino Gesù Hospital in Rome with good results (in the first experiment, about two thirds of the children were exempt while one third exhibited prolonged incubation in the second experiment twenty-four out of thirty-six were exempt, while eight presented prolonged incubation). The partial success attained would have been in all probability total if in place of the small doses employed (from 5 to 7 cc in agreement with Pontano's suggestion) stronger doses had been administered. The author advises further researches in order that the problem of prophylaxis in measles, which is so important for children may be solved.

Semana Medica, Buenos Aires

77 1393 1456 (Nov.) 1930

- Treatment of Chronic Obstruction of Auditory Tube I. Samengo and P. L. Errecart—p. 1399
*Cystic Embryoma of Bladder Case F. Carrasco—p. 1400
Intravenous Quinidine Therapy in Paroxysmal Tachycardia T. I. Joffe and I. Co. Jr.—p. 1403
Surgical Treatment of Ununited Fractures of Lower End of Humerus T. Croia—p. 1407
Spondylolisthesis Treated with Osteoplastic Graft I. H. Carrasco—p. 1409
Polycystic Disease of Kidney in Twin Brothers I. M. Herrero, J. Damianovich and P. I. C. Annone—p. 1430
Determination of Urine Content of Meat Extract by Krug's Method A. F. Cudero and G. W. L. Mann—p. 1436
Determination of Globular Resistance in Toxemia P. I. Carrasco—p. 1438

Reticulo-Endothelioma of Tonsil Metastasis in Lung L Zeno O Comes and J M Cid—p 1442
Simplification of Technique of Halban's Operation for Genital Prolapse A H Molino—p 1446
Malignant Degeneration of Cervix as Late Result of Subtotal Abdominal Hysterectomy A Churco—p 1448

Cystic Embryoma of Bladder—Castaño says that his case of parasitic teratoma or cystic embryoma of the bladder is the second one reported in the literature. He reviews the genesis of embryonic tumors. His patient, aged 42, while in normal condition, complained occasionally of intermittent disturbances of the bladder associated with hematuria and pain in the perineum. The disturbances followed excessive walking. After one of the attacks the patient while voiding, felt the sensation of having eliminated something. She observed the urine and found an object resembling a small bundle of straw, which proved to be calcified hairs. Roentgen examination showed a pedicled tumor of the bladder. An operation was performed in which the tumor was successfully removed. The anatomicopathologic study of the tumor proved that it consisted of fibrous tissue bones and a papillomatous surface of skin with sebaceous glands in which hairs (like those expelled) were lodged. The lining epithelium of the tumor was ulcerated and the subjacent tissue was infiltrated with lymphocytes and polymorphonuclear leukocytes. There were also pieces of cartilage enclosed in perichondrium and dermis. The author says that in his case the tumor should not be mistaken for a dermoid cyst, in which bones or teeth are enclosed in the cystic cavity. In his case, on the contrary, a layer of skin covered an osteo cartilaginous skeleton, proving that it was a parasite teratoma or cystic embryoma.

Intravenous Quinidine Therapy in Paroxysmal Tachycardia—Padilla and Cossio report two cases of supraventricular paroxysmal tachycardia, one of an auricular and the other of an infranodal origin, in which the intravenous administration of quinidine sulphate suddenly arrested the attacks. The authors conclude that intravenous quinidine therapy is indicated because of its harmlessness in every attack of paroxysmal tachycardia that cannot be arrested by the methods of treatment in common use. The following precautions should be observed in the administration of quinidine. The quinidine sulphate used should be chemically pure with an impurity no higher than 0.5 per cent. The doses should be 0.5 Gm, dissolved in 10 cc of physiologic solution of sodium chloride and as perfectly sterilized as is necessary for intravenous administration. The injection should be given slowly, the patient being placed in a horizontal position. If the dose mentioned does not arrest the attack, a larger dose may be administered, never exceeding a maximum of 0.15 Gm for each 10 Kg of body weight. When the intravenous injection of quinidine causes a cessation of the attack, the drug should be given orally in the usual doses for some time longer, to secure lasting results.

Deutsches Archiv für klinische Medizin, Leipzig

169 1128 (Nov.) 1930

Excretion of Sodium Bicarbonate in Urine in Diabetes Insipidus F Mainzer—p 1

*Fibrinopenia in Adult R Jurgens and H Trautwein—p 28

*Infarct of Myocardium Electrocardiographic Diagnosis Grotel—p 44

*Allergy in Relation to Eosinophilia A Peipers—p 65

*Tuberculous Meningitis Glycyltryptophan Test in Cerebrospinal Fluid J Ammerschlager—p 75

*Concurrence of Cirrhosis of Liver and Gynecomastia F Paula—p 83
Renal Insufficiency Caused by Oxalic Acid Poisoning F Koch—p 100

Fibrinopenia in Adult—Jurgens and Trautwein review the three cases of hemorrhagic diathesis with complete or almost complete disappearance of the fibrinogen from the blood reported in the literature and to these add the clinical history of a fourth case the first one ever observed in an adult. Examination of the blood revealed a great deficiency of fibrinogen but a normal amount of all the other components of coagulation. Postmortem examination disclosed an almost completely isolated extensive bone carcinoma with fibrous transformation of the bone marrow. The primary growth was a carcinoma of the prostate. The macroscopic and particularly the microscopic changes indicated that the bone marrow plays a part in the formation of fibrinogen.

Infarct of Myocardium Electrocardiographic Diagnosis—Grotel gives the characteristic changes in the electro-

cardiogram in infarct of the myocardium thus: 1 During the first few days (from one to ten) following complete obstruction of a coronary artery there is an elevation of the R(S)T interval above the iso electric line or a dropping below it with a positive and high T deflection. 2 After from one to ten days there appears a negative deep pointed T deflection preceded by an R(S)T interval with its convexity directed upward thus accompanied by a decrease in the size of the R deflection (in some cases by an increase in the size of the Q deflection). 3 The elevation of the R(S)T interval above the iso-electric line in leads I and II is usually accompanied by its descent below the iso electric line in leads II and III. Usually there appears besides the negative T deflection in leads I and II a positive T deflection in leads II and III. In rare cases there is observed a displacement of the R(S)T interval above or below the iso electric line and the negative T deflection simultaneously in leads II and III. The displacement of the R(S)T interval and the changes in the T deflection in lead II usually repeat the character of the changes either in lead I or in lead III. In angina pectoris without infarct of the myocardium specific changes in the electrocardiogram were not observed. Therefore electrocardiographic examination is of great importance in the differential diagnosis between attacks of angina pectoris caused by an infarct and ordinary attacks of angina pectoris without infarct.

Allergy in Relation to Eosinophilia—Peipers states that in exogenic allergic asthma with positive cutreaction eosinophilia is not always present. It is only one of the clinical manifestations of allergy, and frequently of the predisposition to attacks of asthma. On the other hand, the cutreaction is positive in many clinically latent cases. In persons with a negative cutreaction the presence of eosinophilia indicates that a further search for an allergic etiology should be made with other methods because even in definite allergic diseases that valuable diagnostic symptom may be absent. With the technique used (smear method) an increase in the number of eosinophil cells in the positively reacting skin could not be demonstrated.

Tuberculous Meningitis Glycyltryptophan Test in Cerebrospinal Fluid—From observations in fourteen cases of meningitis, Ammerschlager concludes that tuberculous meningitis cannot be differentiated from other kinds of meningeal inflammation by means of the glycyltryptophan test with cerebrospinal fluid. In basal meningitis the test is definitely positive, but it is also positive in nontuberculous meningitis if it is accompanied by a cell count of at least 500. In such non-tuberculous conditions with an increase in the ferment content of the cerebrospinal fluid a decrease in the intensity of the reaction makes it possible to draw conclusions with regard to the prognosis. In doubtful cases, however, the test is not absolutely reliable.

Concurrence of Cirrhosis of Liver and Gynecomastia—Paula states that, in seven cases of cirrhosis of the liver observed over a period of eight months, gynecomastia was noted five times. His object in reporting the cases is to call attention to the frequent concurrence of the two conditions, because if subsequent investigations disclose changes in the mammary glands in a high percentage of cases of cirrhosis they might lead to important conclusions with regard to either cirrhosis of the liver or gynecomastia.

Deutsche medizinische Wochenschrift, Berlin

56 2031 2074 (Nov. 28) 1930

*Fatalities Following Blood Transfusions H Wildegans—p 2031
Influence of Wavelengths in Irradiation of Ergosterol E Kisch and T Reiter—p 2034

Cerebral Focal Manifestations in Diabetic Coma E Kestermann—p 2036

Ankylopoietic Spondylitis in Brothers A J Weil and B Alloh—p 2038

Avertin Anesthesia in Pulmonary Tuberculosis H Kleesattel—p 2040

Ovarian Hormone Therapy H Wiesbader—p 2043

Fatalities Following Blood Transfusions—Wildegans points out that owing to the great confidence in the reliability of the blood group tests, the number of blood transfusions has greatly increased in recent years. However, in spite of blood group tests, fatalities following blood transfusions are more frequent than is commonly believed. A critical consideration

of the causes of the fatalities shows mistakes that are due to carelessness and that could be avoided, and also those that cannot be foreseen. To the first type of errors belong misunderstandings such as exchanging donors in the event that several transfusions are made at the same time. Fatalities due to errors in the blood group tests can be avoided if a control test is made immediately preceding the transfusion. In order to avoid mistakes in blood group tests, which are caused by deteriorated agglutinating serums, it is advisable to subject these serums to control tests. Before every transfusion the serum of the recipient should be mixed with the erythrocytes of the donor. Occasionally errors in the blood group determination may be due to abnormalities in the blood group. A complication may also be caused when the blood of the donor is not sufficiently diluted in the recipient, this is the case in patients in whom the quantity of blood has been greatly reduced. The total amount of the circulating blood should always be estimated before the transfusion is begun, and not more than one sixth or one fifth of the total quantity of blood should be transfused at one time. Mass transfusions from several donors are likewise not advisable, unless injections with blood diluting fluids have preceded. Endangered by blood from so called universal donors are such persons in whom the blood-forming apparatus is not functioning properly. To detect auto-agglutination, which frequently exists in hemolytic icterus, pneumonia, anemia, cachexia and syphilis, the serum should be mixed with a drop of fresh blood. The phenomenon of panagglutination, which occurs in bacteremia and in chronic suppurations, may likewise prevent a correct determination of blood groups. Death after transfusion is mainly due to the fact that the elimination of the foreign substances overtakes certain organs, such as the kidneys, liver heart and vessels, and causes insufficiency. The danger of thrombosis or of embolism following transfusion is not great, provided the technic is faultless. In some cases it was found that death was caused by dilatation of the heart. Transfusion fatalities are more frequent in diseases of the blood and during sepsis than in acute hemorrhages. In spite of careful examinations, it has happened that malaria and syphilis have been transmitted by blood transfusions. Danger of anaphylaxis exists if in case repeated transfusions are necessary, the same donor is chosen. To avoid this, a new donor of the same blood group should supply the blood. Still under discussion is the relation between agglutination and hemolysis. If hemolysis may take place without a preceding agglutination, then it would be necessary that in the preliminary tests more attention is given to hemolysis than has previously been done.

Klinische Wochenschrift, Berlin

9 2185-2232 (Nov. 22) 1930

- Physiologic and Pathologic Significance of Thymolymphatic System E. Moro—p. 2185
Specific Dynamic Action of Various Types of Protein G. Keel—p. 2189
Parasystole Caused by Simple Interference and with Transition into Bigeminy D. Scherf and A. Schott—p. 2191
Are Pfeiffer's Glandular Fever and Glandular Fever Identical? W. Schultz—p. 2193
*Artificial Pneumothorax in Treatment of Pneumonia in Infants J. Duken—p. 2195
*Pneumothorax Therapy of Pneumonia in Infants J. Jahr and R. Neumann—p. 2200
Artificial and Spontaneous Hypoglycemia A. Oppenheimer—p. 2202
*Reflexes of Sinus Caroticus During Epilepsy G. Marinresco and A. Kreindler—p. 2204
Reaction of Pregnant Uterus to Thermic Stimulation H. Runge and H. Hartmann—p. 2205
Action of Mersyl in Rectal Application H. Vintson—p. 2207
Lipoid Cell in Anthraxosis of Dura Mater and of Bones of Skull E. Schliephake—p. 2207

Artificial Pneumothorax in Treatment of Pneumonia in Infants—In an infant aged 10 months with pneumonia in the right upper lobe an interlobar exudate developed. Duken performed an interlobar puncture and a pneumothorax developed. After that, the child's condition improved rapidly. This unexpected therapeutic effect induced the author to employ the pneumothorax in similar cases. He gives several case reports and thinks that in some instances the therapeutic effect of the pneumothorax was due to the fact that the lung was put to rest in other cases however the good results were due to the changes in the intrathoracic pressure which influence the blood supply. The increased pressure on the side of the pneumothorax

has the effect that more blood enters the healthy lung, and the increased activity of this lung compensates for the insufficiency of the diseased lung, and thus cyanosis is prevented. The author's experiences with pneumothorax therapy of pneumonia in infants and children are limited to eight cases, in which he used this form of treatment in the course of three years. This small number indicates that, in spite of the favorable effects obtained with this treatment, it was employed with great discrimination. In most cases of pneumonia in infants the usual conservative methods are effective. Artificial pneumothorax is advisable in cases of unilateral pneumonia with or without interlobar exudation, which take a protracted course, and which involve the danger of bronch ectasis. It might also be resorted to in order to counteract cyanosis. However, pneumothorax is contraindicated if a unilateral pneumonia of the lower lobes is complicated by a diffuse bronchitis of the other side of the lung. Another contraindication is the presence of thick, suppurative sputum, or of large quantities of sputum because in such instances it is probable that the disturbance involves other conditions besides the pneumonia, and in such cases diathermy has given favorable results.

Pneumothorax Therapy of Pneumonia in Infants—Jahr and Neumann employed artificial pneumothorax in five infants with pulmonary diseases. The authors agree with Duken and other investigators that in some cases this method has therapeutic value. Artificial pneumothorax is indicated in cases of pneumonia with a protracted course and also when pneumonia is complicated with interlobar pleurisy or with mediastinal pleurisy.

Reflexes of Sinus Caroticus During Epilepsy—Marinresco and Kreindler point out that it is generally accepted that an epileptic seizure is related to disturbances in the cerebral circulation. Because the sinus caroticus governs the blood supply of the brain, the authors studied the reflexes of the sinus caroticus on twenty six epileptic patients, by graphically recording the pulse, respiration and the blood pressure, while pressure was exerted on the sinus. To determine the vasodepressor action of the sinus pressure test, plethysmography was employed. On the basis of their observations the authors reach the following conclusions: 1. The reflexes of the sinus caroticus are reduced in epileptic persons. 2. The vasomotor nerves and the blood pressure show a high degree of instability during epilepsy. 3. In some patients especially in epileptic persons, pressure on the sinus may lead to typical convulsive attacks. From this it may be deduced that the sinus caroticus is of great significance in the mechanism of an epileptic seizure.

Medizinische Klinik, Berlin

26 175-1772 (Nov. 21) 1930 Partial Index

- Clinical Aspects of Hypertension H. Strauss—p. 1735
Treatment and Prophylaxis of Whooping Cough by Means of Vaccine W. Kaube—p. 1740
Toxin for Schick Test N. Kovacs—p. 1742
Combined Iminine Blue and Ray Therapy of Malignant Lymphoma H. Bernhardt—p. 1743
Gastrocardiac Syndrome W. Kuckuk—p. 1748
Experiences with Quinidine Therapy in Perpetual Arrhythmia H. Bulte and Reinwein—p. 1751
Tearing of M. Biceps Brachii H. Sielen—p. 1752
Simple Colorimetric Determination of Uric Acid W. and W. Zerkendorfer—p. 1753
Scurvy in Rats W. Kollath—p. 1754

Treatment and Prophylaxis of Whooping Cough by Means of Vaccine—Kaube reports his experiences with a whooping cough vaccine in an institution for children and nurslings. The preparation that he employed is a vaccine which is injected in increasing concentrations. The number 1 ampules contain 2000 million of *Bacillus hemophilus pertussis*, the number 2 ampules contain 4000 million, the number 3 ampules contain 6000 million and the number 4 ampules contain 8000 million. The injections are made intragluteally at intervals of from three to four days. In the children's department eight or ten children contracted whooping cough. The vaccine treatment had the effect that the sick children improved rapidly so that they were practically cured from ten to twelve days after the first injection. The two other children remained healthy. Of the fifteen nurslings, who likewise received the vaccine two developed a mild form of whooping cough and the others either remained entirely free from it or the infection was so slight that

it was hardly noticeable. The injections were almost painless and did not cause complications such as anaphylactic shock. Even those of the infants and children who developed a slight fever had always a good appetite and were not irritable. The author emphasizes that his experiences with the vaccine are limited to cases in which the whooping cough was in the beginning stage or had not yet begun. He does not know whether the vaccine therapy will have the same favorable effects in a more advanced stage of the disease. However, he recommends its use during the early stage and also for the protection of children who are exposed to whooping cough infection.

26 1773 1809 (Nov. 29) 1930

Clinical Aspects and Therapy of Influenza During Childhood. F. Müller —p. 1773

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Problem of Traumatic Diabetes Following Injuries of Central Nervous System. J. Woll —p. 1781

Acute Appendicitis in Situs Viscerum Inversus Totalis. I. Mittelbach —p. 1784

*Rupture of Uterus Following Incorrect Dosage of Hypophyseal Preparations. A. von Probstner —p. 1785

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Localized Scleroderma with Unilateral Atrophy of Tissues in 1 Extremity. F. H. —p. 1789

Relation Between Cancer and Hypophysis. D. Engel —p. 1790

Behavior of Capillaries in Patients with Arthritis. A. J. Weil —p. 1791

Rupture of Uterus Following Incorrect Dosage of Hypophyseal Preparations.—Von Probstner describes five cases of rupture of the uterus caused by incorrect administration of the preparation of the posterior lobe of the hypophysis. Only one of the patients recovered. In this case the rupture had been incomplete. It is emphasized that the ruptures were not caused by the preparation as such but rather by the incorrect administration by giving too large doses, by too frequent administrations or because the preparation was administered at the wrong time or in cases in which it was contraindicated, such as in abnormal presentations of the fetus and in disproportion between the fetal head and the maternal pelvis. The hypophyseal preparations exert the stronger influence the more susceptible the uterus and the farther advanced the process of delivery, namely, during the period of expulsion. They should therefore be employed only during this period. Because the uterine contractions that are produced by the administration of hypophyseal preparations have in the beginning a spasmlike character, they may endanger the life of the fetus. Later they usually become normal, but occasionally the spasmodic labor pains persist and in order to prevent asphyxia of the fetus, the birth has to be completed quickly. However, during the period of dilatation this is not possible without endangering the life of the mother. In regard to the administration of hypophyseal preparations during the period of after-birth, it is stated that some authors have recommended them for every case in order to hasten the expulsion of the placenta. The author however warns against this. He emphasizes that the normal uterine contractions should not be interfered with even if, as the result of overreversion, short intermission set in. The contraction of the uterus should not be accelerated without absolute necessity because this would effect what really should be avoided, namely, atony. Hypophyseal preparations are contraindicated in cardiac and in renal diseases, also in eclampsia and in disproportion between the fetal head and the maternal pelvis. In the conclusion it is pointed out that, if the hypophyseal preparation has been administered, the physician has to remain with the patient until the action of the echolic is completed.

Munchener medizinische Wochenschrift, Munich

77 1999 2046 (Nov. 21) 1930

Cessation of Life Innervation. I. R. Müller —p. 1999

*Is There a Thrombasthenia? P. Morawitz and R. Jürgens —p. 2001

Atmospheric Modification of Cutaneous Capillaries. Bettmann —p. 2003

Sterilization of Injection Fluids and of Medicaments. E. Leschke —p. 2006

Calmette's Pyrrhus Victory. H. Much —p. 2008

Foundations of Modern Surgery of Brain. M. Ernst —p. 2012

*Voluntary Modification of Sex in Man. H. Futh —p. 2014

Favus in South Bavaria. H. O. Munsterer —p. 2015

Is There a Thrombasthenia?—Morawitz and Jürgens state that the term thrombasthenia was introduced by Glanzmann, who applies it to a functional deficiency of the blood plates when

they are present in a normal or an almost normal number. However, other investigators have proved that the coagulation of the blood is dependent not only on the presence and the proper function of the blood plates but also on the condition of the vessels, especially the vascular endothelium. A definite demonstration whether a deficient agglutination capacity of the platelets is possible when their number is normal can be made only if the variable vascular factor can be excluded. Up to now there was no reliable method to accomplish this. However, the authors constructed a special apparatus, a so-called capillary thrombometer by which it is possible to determine the thrombosis time extracorporeally and independently of vascular factors. In a case of a peculiar hemorrhagic diathesis, a sort of pseudo-hemophilia, it could be shown that true thrombasthenia does occur. It becomes manifest in a deficient agglutination capacity of platelets that morphologically and numerically are normal. By demonstrating the abnormally prolonged thrombosis time in the capillary thrombometer the proof was given that this phenomenon may develop without involvement of the blood vessel.

Voluntary Modification of Sex in Man.—Futh calls attention to Unterberger's article on the voluntary modification of sex in man which was reported in the *Deutsche medizinische Wochenschrift* (56 304 [Feb. 21] 1930, abstr. THE JOURNAL, May 3, 1930, p. 1451). He also cites others who studied this problem. Blum expresses the opinion that Unterberger's results are not accidental and points out that in 1924 he already had called attention to the sex determining action of the vaginal secretion. Then Futh reports his own investigations. In order to determine whether the reaction of the vaginal secretion influences the sex of the child the vaginal secretions of 23 pregnant women were examined. It was found that among those with a strong acid reaction of the vaginal secretion the number of female births was largest whereas among those with a slight acidity or with an almost amphoteric reaction the number of male births predominated. However, it was yet necessary to determine whether the reaction of the vaginal secretion is the same at the time of conception as during pregnancy. Control tests were made after confinement and it was found that the reaction remains about the same. The larger number of male births in case of slight acidity or in an almost amphoteric reaction seems to corroborate Unterberger's theory. However, it must be admitted that objections such as accidental limited number, and slight differences in the percentages cannot be entirely disregarded.

77 2047 2094 (Nov. 28) 1930

Epidemiology of Weil's Disease with Especial Consideration of Water Infection. P. Uhlenhuth —p. 2047. Cit.

*Congo Red as Hemostatic. T. Wedekind, J. Becker and B. Wientert —p. 2049

Upper Limit of Normal Body Temperature. H. Zimmermann —p. 2051

Black Dermographism. Emdin —p. 2055

Diagnosis of Renal Diseases. L. Peritz —p. 2056

*Chronic Myeloid Leukemia and Pregnancy. Riddler —p. 2057

Surgical Treatment of Ascaris. F. Franke —p. 2058

Phrenic Exeresis and Its Significance in Surgical Treatment of Pulmonary Tuberculosis. T. Niegeli and H. Schulte Tigges —p. 2061

Therapeutic Applicability of Aconitum Napellus. H. F. von Kress —p. 2062

Hormonal Sterilization of Female Organism. L. Haberlandt —p. 2064

Congo Red as Hemostatic.—Following a discussion of the experimental foundations of the hemostatic action of Congo red, Wedekind et al. give case reports that illustrate its efficacy in various forms of acute hemorrhages. Congo red was employed in fifty cases, namely, in hemorrhages during pulmonary tuberculosis and in bronchiectatic hemorrhages, also in menorrhagia in excessive bleeding after the extraction of teeth and in various other hemorrhages. From 5 to 10 cc. of a 1 per cent sterile aqueous solution of Congo red was administered intravenously. Secondary effects were never observed even when the injection was repeated. It was found that the injection of the Congo red solution effected an increase in the number of monocytes, which indicates a better functioning of the reticulo endothelial system. The number of blood plates and the fibrinogen content were increased and the coagulation time was reduced. Congo red was especially effective in patients with abnormalities in the composition of the blood in these instances it was superior to other hemostatics. However, in patients with a normal blood picture the result was not always satisfactory.

Chronic Myeloid Leukemia and Pregnancy—Ridder states that a review of the literature convinced him that the beginning of a pregnancy and the maturing of a healthy child is extremely rare during myeloid leukemia. He then reports the clinical history of a woman, aged 34, who complained of palpitation of the heart, of steadily increasing weakness and of pain on the left side of the abdomen. Examination revealed a large tumor of the spleen and the characteristic blood picture of myeloid leukemia. Roentgen therapy was instituted and under its influence the splenic tumor decreased and the patient's general condition improved likewise. Several months later, however, she asked medical advice, because her abdomen was again becoming larger. It was now discovered that she was pregnant. Several months later she gave birth to a full term, healthy, male child. After confinement the woman's condition became steadily worse, and two and one-half months later she died. The child developed normally, and an examination of the blood did not reveal abnormalities. The author points out that as far as can now be seen the frequent roentgen treatments have had no detrimental influence on the child.

Surgical Treatment of Ascites—Franke criticizes Lepelne's pessimistic point of view in regard to the surgical treatment of ascites. Because Lepelne's unfavorable criticism might prevent many general practitioners from seeing surgical aid for a patient with ascites, the author stresses the therapeutic value of surgical treatment. He discusses the various operative methods, namely Talm's operation and its modifications, permanent subcutaneous drainage, extirpation of the spleen as recommended by Mayo, and especially Ruotte's operation. He considers Ruotte's operation as the method of choice.

Phrenic Exeresis in Surgical Treatment of Pulmonary Tuberculosis—Naegeli and Schulte Tigges first review a former article in which they reported their observations on 100 patients who had undergone phrenic exeresis. They had found that, in 48 per cent of the patients with cavern formation, exeresis was followed by a disappearance of tubercle bacilli from the sputum. The most favorable results had been obtained in patients with secondary, round caverns, with a tendency for shrinking and in whom there were no adhesions and infiltrations in the surroundings of the cavern. Exeresis was most effective in the absence of pleuritic adhesions. Because some authorities had asserted that the permanent results of phrenic exeresis are not favorable, the authors subjected fifty-five patients who from two to four years previously had undergone phrenic exeresis to after examinations. Seventeen of the patients were free from bacilli and were able to follow their occupation. In twenty-four patients, who had had large caverns with infiltrations in their surroundings, the results were likewise favorable in that the caverns were smaller and the patients were able to do light work. However, the sputum still contained bacilli. The other fourteen cases showed no improvement but rather exacerbations. The authors come to the conclusion that the selection of patients who are subjected to phrenic exeresis should be made with great care. The comparatively simple technique of this method should not be a temptation to perform it without carefully evaluating its advisability.

Wiener klinische Wochenschrift, Vienna

43 1461 1492 (Nov. 27) 1930

- *Therapy of Lupus Vulgaris. Ger on Diet. R. Volk.—p. 1461
- Treatment of Esophageal Stricture. H. Pirker.—p. 1467
- Determination of Total Carbohydrate Content and Demonstration of Glycogen. H. Popper and O. Wozasek.—p. 1471
- Irritative Conditions of Urinary Bladder Treated by Means of Thermo-bromine Sodiumsalicylate. F. Fuchs.—p. 1475
- New Apparatus for Determination of Coagulation Time. H. Homma.—p. 1474
- Foundations of Light Therapy. W. Hausmann.—p. 1475
- Therapy of Scitica. H. Herschmann.—p. 1476
- Diagnosis by Means of Tuberculin. E. Helmreich.—p. 1479

Therapy of Lupus Vulgaris—Gerson Diet.—Volk first discusses the main features of Gerson's diet. It is based on the observation that a diet which effects acidity promotes the healing of infectious processes whereas a more basic diet retards the healing. The main characteristics of the diet are (1) deficiency in the sodium chloride content, (2) large quantities of rich vegetables and (3) changes in the proportions of proteins, fats

and carbohydrates. Compared with Voit's formula, which prescribes for a healthy worker 118 Gm of protein, 56 Gm of fat and 500 Gm of carbohydrates, the diet for tuberculous patients prescribes about 90 Gm of protein, 162 Gm of fat and only 222 Gm of carbohydrates. This shows a considerable increase in the quantity of fat, whereas the carbohydrates are reduced to less than half. It has been proved in animal experiments that, if the food contains excessive quantities of carbohydrates, the susceptibility to tuberculosis is heightened whereas a diet with large amounts of fats reduces the susceptibility to tuberculous infection. The author further stresses the great significance of the vitamins. In discussing the therapeutic value of the dietary treatment he states that it gives the best results in tuberculosis of bones and of joints and particularly in lupus vulgaris. Tuberculosis of the mucous membranes was also favorably influenced. In regard to pulmonary tuberculosis the author states that his observations coincide with those reported by Sauerbruch, namely, that many patients, who were in a hopeless condition improved to such an extent that they could be treated surgically. In the conclusion it is emphasized that, although the Gerson dietary treatment cannot be considered a panacea for all cases of tuberculosis, it is nevertheless a valuable therapeutic aid.

Zeitschrift für Tuberkulose, Leipzig

58 385 466 (Nov.) 1930

- Artificial Pneumothorax. Development of Infiltrations in Opposite Lung. H. Fechter.—p. 385
- Tuberculous Caverns of Lung. Spontaneous Healing. A. J. Katzmann.—p. 393
- *Filtrable Elements of Tuberculosis Virus. A. Calmette and J. Valtis.—p. 402
- Tuberculosis in German Students. E. Srupe and Mahn.—p. 407
- Gold Treatment of Tuberculosis. K. Henius.—p. 424
- Gerson's Dietary Treatment of Tuberculosis. H. Stein.—p. 426
- New Drugs and Food Preparations Used in Treatment of Tuberculosis. G. Schröder.—p. 431

Filtrable Elements of Tuberculosis Virus—Prebacillary Granulemia.—In experiments on guinea-pigs, Calmette and Valtis demonstrated that subcutaneous or intraperitoneal injections of filtrates containing the ultravirus of tuberculosis, regardless of whether they were obtained from young cultures or from tuberculous organs, blood urine, milk exudates, pus, sputa or sputum containing tubercle bacilli, frequently caused slight enlargement of the lymph nodes without the formation of nodules. In the enlarged lymph nodes a careful search from three to eight weeks after the injection revealed typical tubercle bacilli and in addition acid fast granules. About the acid-fast granules were numerous extremely fine, barely visible dustlike granules some of which were spherical and some rod shaped. These granules were not acid fast. In many of the animals that died a few days or weeks following the injection of the filtrate postmortem examination did not reveal macroscopic changes. A careful microscopic examination of the slightly enlarged lymph nodes however usually revealed a few bacilli. Occasionally the spleen was slightly enlarged and the lungs showed small localized areas of hepatization. When the slightly enlarged lymph nodes were ground up and injected into other guinea-pigs enlargement of their lymph nodes was produced and if serial passages were made in this manner there developed after six to eight passages typical tuberculous changes with nodules undergoing caseous degeneration. Inoculations made from the nodules produced typical tuberculosis. It was also demonstrated that the invisible and virulent elements in the filtrates when injected intraperitoneally in pregnant guinea pigs caused pathologic changes in the fetuses. Young animals injected in this manner did not develop the characteristic changes in the organs noted following the injection of guinea pigs with tubercle bacilli but seemed to have a severe intoxication. Some groups of lymph nodes were greatly swollen and in them were typical acid fast bacilli. By means of serial inoculations of guinea pigs with the bacilli their characteristics could be made to approach the characteristics of typical tubercle bacilli until finally they could not be differentiated from tubercle bacilli cultivated from tuberculous organs. To substantiate this experimental observation clinically the authors examined post mortem twenty-six infants and children of tuberculous mothers. The microscopic examination showed in 89 per cent of the cases that

a transplacental infection with filtrable elements had occurred. It was noted that if this infection occurs in from the third to the sixth month of pregnancy the child frequently dies during intra uterine life or during the first weeks after birth. If it occurs in a later period of pregnancy the infection is usually non-virulent and may disappear completely, it rarely causes tuberculous changes and may even produce a transient resistance to virulent infections. These observations show that the child of a tuberculous mother frequently contains the virus of tuberculosis at birth and that from the virus true tubercle bacilli may develop. Even when they do not the virus itself produces an intoxication that may terminate fatally during the first few weeks of life. This explains why the new born infants of tuberculous mothers die so frequently and why it is impossible to demonstrate the slightest change in their organs. Those however, who are infected with the ultravirus shortly before birth and survive the infection contain a few bacilli of low virulence or benign tuberculous changes which give them a resistance to later infections. Emphasis is laid on the fact that the observations mentioned necessitate a revision of the views held until now with regard to the mode of origin of tuberculous infection. The disease called tuberculosis and characterized by the presence of inoculable giant cells containing bacilli and of tubercles in various organs is only the chronic form or the end stage of an infection caused by an ultravirus whose elements are at first invisible but gradually become nonacid fast dustlike bodies and later develop into acid fast granules and finally into tubercle bacilli. A large number of serous effusions in the pleural pericardial and peritoneal cavities and in the meninges and joints appear to be caused by the ultravirus exclusively, as do also various skin diseases (erythema nodosum, sarcoid papulonecrotic tuberculid and so on), various septicemias (typhobacillosis) and granulomas in which it is extremely difficult to find acid-fast tubercle bacilli. The recommendation is made that all these pathologic conditions in which the ultravirus of tuberculosis seems to be the main cause and in most of which the prognosis is good be differentiated from true bacillosis and be designated as "prebacillary granuloma."

Zentralblatt für Gynäkologie, Leipzig

51 2881 2944 (Nov. 15) 1930

- Operative Treatment of Rectovaginal Fistula. H. Guth—p. 2882.
Relations Between Anterior Lobe of Hypophysis and Ovary. Hormonal Sterilization. A. Vahner—p. 2883.
*Chorio-epithelioma with Rare Clinical Symptoms. D. von Rausz—p. 2887.
*Fasting Cures in Hyperemesis Gravidarum. H. Offergeld—p. 2892.
Etiology and Prophylaxis of Uterine Myoma. N. Kakuschkin—p. 2899.
Congenital Isolated Fissure of Cervix Uteri and of Portio vaginalis. I. Benzon—p. 2909.
Temporary Degeneration of Myoma During Pregnancy. C. Fervers—p. 2911.

Chorio-Epithelioma with Rare Clinical Symptoms—

According to von Rausz, the recognition of a chorio epithelioma is, in most instances not difficult especially when a hydatid mole pregnancy has preceded. In the case reported, however, the clinical symptoms differed from those that are usually observed. The author describes the clinical history of the case. He thinks there can be no doubt that the chorio epithelioma was the sequela of the hydatid mole of five years previous. The amenorrhea was probably the result of the repeated curettage by which the entire mucous membrane had been destroyed. Examination of the scrapings removed during curettage gave no indications for an existing chorio-epithelioma. The chorio epithelioma had originated in an intramural focus, and this is why fragments of the chorio epithelioma were not found in the material removed by curettage, and this also explains why hemorrhages, which are usually the main characteristic of chorio epithelioma were absent. Because cases without hemorrhage are extremely rare, the disorder was not recognized as chorio epithelioma. The operation revealed that the destructive growth in the uterine wall had spread to the bladder and to the parietal peritoneum. The patient died thirty-one days after the operation. The hemorrhages, which had not been external, had been internal between the tissues and into the abdominal cavity in accordance with the direction of the growth. In the conclusion, the author stresses the value of the Zondek-Aschheim reaction. He thinks that if this test had been made following the hydatid mole pregnancy, the chorio epithelioma would have been detected earlier.

Fasting Cures in Hyperemesis Gravidarum—Offergeld asserts that hyperemesis gravidarum is mainly due to metabolic disturbances and to an increased irritability of the sympathetic nervous system. Accordingly, he advises hormone therapy. He recommends hormones of the ovaries and of corpus luteum. Whether thyroidal hormone and also small amounts of the suprarenal hormone are advisable depends on the individual case and occasionally extracts of other organs might be helpful. Because fasting often counteracts vomiting, it might also prove helpful in hyperemesis gravidarum. A prolonged fasting cure might be injurious to a pregnant organism, but a shorter fast of one or two days can be safely employed. The author found it helpful in addition to the hormonal substitution therapy, however, he gave about 1.5 liters of fluids. If during this time favorable results are not obtained it is useless to prolong the fasting cure. Besides the complete fast the author recommends a changed diet. A diet rich in proteins should be abandoned in favor of a fruit and vegetable diet. The author thinks that hyperemesis could be avoided in many instances if, during the beginning of pregnancy, a diet too rich in proteins and fats is avoided, and instead a more vegetarian diet is adopted.

Bibliotek for Læger, Copenhagen

122 471 519 (Oct.) 1930

- Crest Omentum: Function and Role in Diagnosis and Treatment of Acute Abdominal Conditions. I. Collin and J. Seedorff—p. 471.
*Sedimentation Reaction in Patients with Cancer. S. A. Holbøll—p. 497.

Sedimentation Reaction in Patients with Cancer—Tests of the sedimentation reaction made by Holbøll in 190 patients with cancer or sarcoma showed a pathologically increased sedimentation reaction in most cases. In some instances the reaction was normal. The increased reaction was parallel with unfavorable clinical manifestations such as anemias, rise in temperature, and development of metastases. The significance of the sedimentation reaction in the diagnosis and prognosis in cancer is discussed.

Hygiea, Stockholm

92 801 832 (Nov. 15) 1930

- *Dystonia of Mucous Membrane of Upper Air Passages. I. Syk—p. 808.
*Case of Tumor of Spinal Cord with Unusual Results on Lumbar Puncture. A. Gronberg—p. 819.

Dystonia of Mucous Membrane of Upper Air Passages—For the "catarrhs" that yield to one or two applications of an astringent, Syk suggests the term "dystonia of the mucous membrane" and thinks that this designation should clinically maintain its place beside chronic catarrh and purely nervous hypersensitivity of the mucous membrane.

Tumor of Spinal Cord with Unusual Results on Lumbar Puncture—Gronberg believes that in his case with typical picture of cranial tumor the lumbar needle punctured the cystic tumor. Quenckenstedt's sign was negative. The contents of the tumor gave bilirubin reactions.

Ugeskrift for Læger, Copenhagen

92 1059 1078 (Nov. 13) 1930

- Fascial Transplantation in Postoperative Ventral Hernia. S. Harild—p. 1059.
*Case of Rectal Hemorrhage from Lesion Due to Thermometer. S. A. Holbøll—p. 1062.

Fascial Transplantation in Postoperative Ventral Hernia—Harild reports five cases of postoperative ventral hernia with transplantation of fascia according to Kirschner. The cases have been observed for from one to five years. There has been no recurrence. Another operative method applied in twenty-seven less grave cases has been followed by recurrence in five cases.

Rectal Hemorrhage from Lesion Due to Thermometer—In Holbøll's case in a man who had recently been given intense antisyphilitic treatment jaundice developed and was followed by rectal hemorrhage. There was a pronounced anemia. Proctoscopy revealed a deep bleeding longitudinal wound 2 or 3 cm long on the anterior wall of the rectum about 4 cm above the anal opening. The anemia was due to the rectal bleeding from this lesion caused by a thermometer.

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NEPHRITIS AND ITS RELATION TO CARDIOVASCULAR DISEASE*

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SAN FRANCISCO

For the purpose of statistical investigation,¹ a series of 212 cases of diffuse nephritis have been segregated into the following groups

1 *Acute nephritis*, 21 cases. This group includes acute interstitial and acute glomerulonephritis with the exclusion of all purely degenerative lesions.

2 *Subacute nephritis*, 41 cases. This group includes all cases of subacute and subchronic glomerulonephritis.

3 *Amyloid nephritis*, 49 cases. This group includes all of the cases that would fall under the heading of "complicated nephrosis" of Fahr or of degenerative Bright's disease or Addison.

4 *Chronic nephritis*, 101 cases. This group represents largely what by others has been designated as malignant nephrosclerosis" or the "combination form of arteriosclerotic nephritis."

In my opinion the cases of "benign nephrosclerosis" have a closer relation to cardiovascular disease than to nephritis because the lesions in the kidneys are relatively insignificant and, as will be shown later, are probably of no great functional importance.

ACUTE NEPHRITIS

Of the twenty-one cases of acute nephritis six showed the histologic picture of acute interstitial nephritis and fifteen that of acute glomerulonephritis.

In acute interstitial nephritis the kidneys were more or less swollen and often distinctly opaque and grayish. The hemorrhagic spots that are so characteristic of glomerulonephritis were missing. The interstitial tissue was irregularly infiltrated with lymphocytes and plasma cells. The epithelium may have been slightly damaged. The urinary changes usually were slight and the cases did not present the usual clinical picture of acute nephritis.

In acute glomerulonephritis the kidneys were often considerably swollen and intensely congested. The renal cortex was full of punctiform hemorrhages which could be clearly seen after the removal of the fibrous capsule (fig 1). The histologic investigation revealed primarily a congestion and leukocytic infiltration of the glomeruli which was followed by the discharge of a hemorrhagic exudate into the capsular spaces and into the corresponding numerous tubules. Some of the

loops of the glomeruli may be filled with hyaline thrombi and undergo necrosis. The bloody fluid that escapes from the damaged glomeruli may coagulate in the capsular spaces and plug them with a meshwork of fibrin enclosing red cells and polymorphonuclear leukocytes. Similar coagula may form in the tubules. This often leads to the formation of leukocytic and blood casts. The tubules were wide and the epithelial cells that lined them often showed various forms of degeneration. The capillaries surrounding the tubules were greatly congested. The interstitial tissue was edematous and filled with neutrophilic leukocytes and lymphocytes. The urinary changes were marked and consisted in the presence of much albumin, many red cells, leukocytes, blood casts and other types of casts, also of free epithelial cells. The frankly bloody appearance of the urine was characteristic. If many glomerular capsules were plugged, the amount of urine was sometimes reduced to complete anuria. Apart from the renal changes the patients often developed edema of the face which sometimes spread to the rest of the body. It is probable that this "renal" edema was due to capillary injury in the edematous parts due to the same toxin that produced the nephritis. A rise of systolic blood pressure may be observed even in the acute cases. One of the patients had developed an acute progressive meningitis.

The etiology was similar in the two types of acute nephritis. Figure 2 shows that in practically all the cases the renal lesions were due to acute septic infection with various types of pyogenic micrococci such as staphylococci (one case), pneumococci (three cases, two of lobar pneumonia and one of empyema) and streptococci in the remaining cases. One of the latter was a case of viridans endocarditis and one a case of scarlet fever. The remainder were infections with hemolytic streptococci in such diseases as tonsillitis, Ludwig's angina, otitis media, puerperal fever, pelvic abscess, erysipelas, cellulitis, infected compound fracture and septic dermatitis.²

In spite of the great frequency of severe streptococcal infections acute nephritis is a relatively rare disease. This would seem to indicate that special conditions must arise in order to produce it.

In the majority of the cases the death of the patient was to a great extent due to the septic infection. In a few cases only did the nephritis contribute materially to the fatal issue.

From the common experience in scarlet fever it is evident that a complete recovery from these acute lesions is possible. The abnormal contents of the capsular spaces and of the numerous tubules are swept out by a flood of urine. The glomeruli recover so far as they

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¹Read before the Section on Pathology and Physiology at the Eighty-first Annual Session of the American Medical Association, Detroit, June 25, 1930.

²Opahls, William. A Statistical Survey of Three Thousand Autopsies. Stanford University Press, 1926.

²The details of these cases are given in the Statistical Survey, p. 248.

have not actually been destroyed, the inflammation subsides in the rest of the tissues, and the lost epithelial cells are regenerated. Reexamination after many years has shown that this recovery is often perfect and lasting.

A favorable outcome, however, is often prevented by persistence of the septic infection and by the severity of the renal lesions.

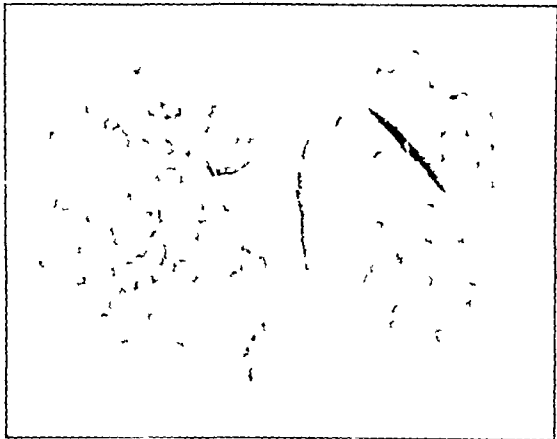


Fig. 1—Kidneys in acute glomerulonephritis

SUBACUTE NEPHRITIS

The forty-one cases of subacute diffuse nephritis represent all stages of subacute and subchronic glomerulonephritis. As shown in figure 3, the etiology was similar to that found in cases of acute nephritis, namely, streptococcal endocarditis in fifteen cases, streptococcal tonsillitis in seven cases, diplostreptococcal septicemia in two cases, severe tooth abscesses in two cases, and septic leg ulcers in two cases. An old syphilitic infection may possibly have been the cause in two cases while no definite etiology could be established in six cases.

The group is a homogeneous one and presents characteristic gross and anatomic lesions. The majority of the kidneys were moderately enlarged. The cortex was wide and opaque, irregularly congested with scattered small hemorrhagic spots (fig. 4). Only a few late cases showed kidneys of normal size or even a slight reduction below the normal (fig. 5).

The glomeruli exhibited various stages of glomerulitis from the early hemorrhagic lesions to crescent formation and invasion of the vascular tufts by connective tissue ending in complete fibrosis. All the different stages could often be seen in the same specimen, suggesting that the lesions occur in successive crops. A varying number of tubules were filled with blood and casts. The amount of epithelial degeneration varied from a slight parenchymatous change to severe fatty degeneration and necrosis. The capillaries between the tubules were greatly congested and the interstitial tissue was heavily infiltrated with round cells, among which in the early stages neutrophilic and often many eosinophilic leukocytes were frequently encountered. As the process continued, a progressive proliferation of the connective tissue had taken place with collapse of groups of tubules. Local arterial lesions were sometimes absent even in the last stages of the process, or they had developed early and in time had become well marked. In the arterioles they consisted in a deposit in their walls of hyaline material which is later followed by

fibrosis, while in the larger arterial branches the picture was one of progressive endarteritis. In a certain proportion of relatively late cases the local arterial changes were accompanied by moderate arteriosclerosis in other parts of the body.

A study of the relation of the arterial changes to the blood pressure is interesting. As shown in figure 3, in twenty-one (about 50 per cent) of the forty-one cases of subacute diffuse nephritis the arteries were perfectly normal in the kidneys and elsewhere in the body. In spite of this a definite elevation of blood pressure had been observed in eight (about 40 per cent) of this group and a hypertrophy of the left ventricle had already developed in seven of these. In ten cases the arteries in the kidneys were diseased, while those elsewhere were normal, six (about 60 per cent of this group) of these patients had high blood pressure and hypertrophy of the left ventricle. In the remaining ten cases arterial disease was present in the kidneys and to a moderate degree elsewhere. Nine of these (90 per cent of this group) had had high blood pressure, and eight of the nine cardiac hypertrophy. It is evident that hypertension frequently occurs in the absence of any demonstrable arterial lesions but that it is more common in cases in which they are present.

The urinary changes were usually well marked and blood could be found in the urine, if not always, at least from time to time.

Edema had been present in more than half of the cases but it had been constantly absent in a certain number of them.

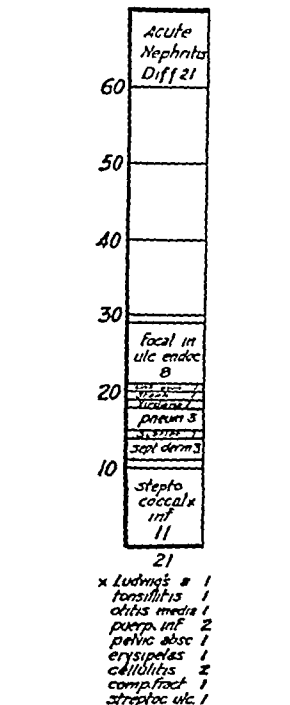


Fig. 2—Number of cases and etiology in acute nephritis. This and the accompanying diagrams to figure 9 inclusive indicate the actual number of cases observed under each heading.

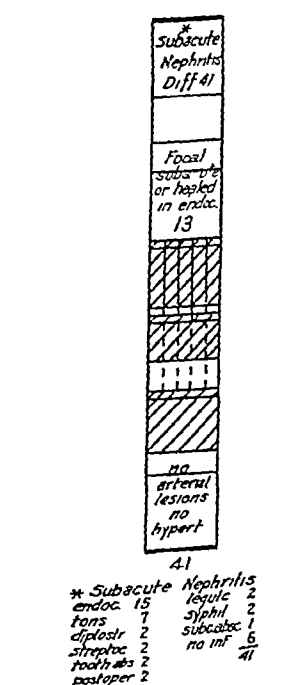


Fig. 3—Number of cases etiology and cardiovascular lesions in subacute nephritis. In this and the accompanying diagrams the degree of arteriosclerosis is indicated by perpendicular lines interrupted by lines indicate local arteriosclerosis only, diagonal hatching indicates high blood pressure.

A progressive secondary anemia had developed in about the same proportion of cases but without reference to the presence of edema. In one case the blood picture closely resembled that of pernicious anemia.

The phenolsulphonphthalein excretion, when tested, was usually found retarded and in severe late cases almost suppressed. Correspondingly there was often a urea retention in the blood.

Albuminuric retinitis had been observed in a few cases only.

The causes of death, so far as could be ascertained, had been as follows: bacterial endocarditis in nine, septic infection in six, cardiac decompensation due to old valvular dis-

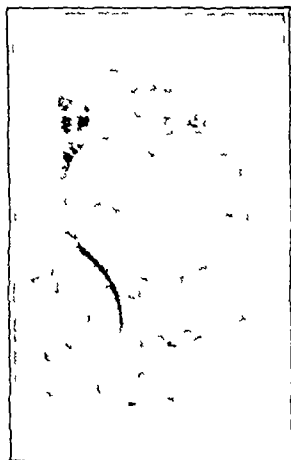


Fig 4—Swollen kidney in subacute nephritis

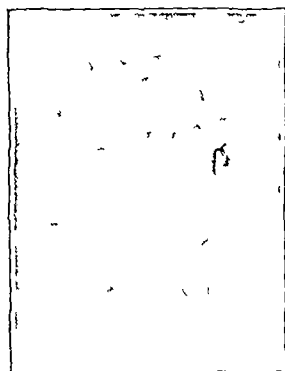


Fig 5—Shrunken kidney in late subacute nephritis

ease in one, acute cardiac failure in one, pulmonary embolism in one, uremia in ten, cerebral hemorrhage in three, anemia in one, bronchopneumonia in four, tuberculosis in one, and suicide in one. In other words, fifteen patients (nearly 40 per cent) had died of the underlying septic infection and fourteen (35 per cent) as a direct result of the nephritis. Among the latter group uremia was most common, next in frequency was cerebral hemorrhage. It is doubtful whether any of the patients had died as a result of a derangement of their general circulation which had been caused by the presence of the nephritis.

AMYLOID NEPHRITIS

The cause of the amyloidosis and of the incidental nephritis was evident in all forty-nine cases of amyloid nephritis. As shown in figure 6 the lesions were due to chronic tuberculosis in twenty-seven cases, to chronic syphilis in five, to leprosy in two, to chronic septic infection in nine, and to malignant tumors in two.

During the earlier stages of the process the kidneys were definitely enlarged, often to a considerable size. The cortex was wide and exceedingly opaque white or yellowish. Hemorrhagic spots were usually absent. Later, by shrinkage, the kidneys were sometimes reduced to normal size or below that. The shrinkage was either diffuse or more irregular leaving a rough surface in the latter case.

The deposition of the amyloid in the glomeruli was accompanied by a slowly progressive fibrosis which gradually caused a fibrous obliteration of many glomeruli. The epithelial lining of the convoluted tubules and of the ascending limbs of the loops of Henle showed marked granular and fatty degeneration. The tubules were full of hyaline casts. In the early stages one found a moderate perivascular round cell infiltration which eventually was followed by a slow connective tissue proliferation. In the course of time this may lead to the development of scars of a considerable size with collapse of the tubules. Local vascular changes

were present in twenty cases (40 per cent) and moderate general arteriosclerosis in five cases (10 per cent). In both groups there was one case each with cardiac hypertrophy and in addition in the first group one case of hypertension without cardiac hypertrophy.

The contrast between the two forms of subacute diffuse nephritis is striking. In amyloid nephritis there were three cases of high blood pressure among forty-nine, or 6 per cent, while in ordinary subacute nephritis there were twenty-four among forty-one, or 54 per cent. The relative rarity of arterial lesions in amyloid nephritis is also apparent. In amyloid nephritis none of the cases with normal blood vessels showed hypertension, and relatively few of those with moderate local and general arteriosclerosis.

Urinalysis always revealed marked changes in the urine, usually, however, without evidence of hemorrhage.

Edema was common but by no means constant.

Progressive anemia was not particularly frequent.

In late cases uremic symptoms had been observed occasionally and modern methods sometimes had revealed a marked decrease in functional activity.

The presence of albuminuric retinitis had not been recorded in any of these cases.

Almost all patients with amyloid nephritis had died not of the nephritis but of the chronic infections which had caused the amyloidosis, such as chronic pulmonary tuberculosis, chronic syphilis, leprosy, chronic septic infections or carcinoma. Only a few of them had died of uremia.

CHRONIC NEPHRITIS

This group of 101 cases has been carefully restudied with the object of discovering whether it is possible to subdivide it into two subgroups: one with primarily vascular and one with primarily glomerular and parenchymatous lesions. The relative proportion of the involvement naturally varies in different cases and there are a few extreme cases in which the lesions do not involve the blood vessels or in which the arterial changes are by far the most important ones, but in most of them the glomeruli, the parenchyma and the blood vessels all show characteristic alterations. Even in cases with extreme vascular lesions one can usually find evidence of healed or even still active glomerulitis. If one assumes that the same causative factors affect the glomeruli and the parenchyma as well as the blood vessels, but to a different extent in different cases, the distinction between the different forms of chronic nephritis loses much of its significance. It is certainly true that, however the lesions may have been brought about originally, the final anatomic and clinical results are similar.

On account of the insidious nature and the chronicity of the disease the etiology is much more difficult to determine than in the more active cases of subacute nephritis. It is significant, however, that the histories in



49	
* Subacute Nephritis in Amyloidosis	
tuberculosis	27
syphilis	5
leprosy	2
chron. septic	9
tumors	2
49	

Fig 6—Number of cases of amyloidosis in amyloid nephritis

Fig 6—Number of cases of amyloidosis in amyloid nephritis

a large proportion of the cases tell of early and repeated attacks of tonsillitis and that anatomically one can often still demonstrate the presence of old septic foci in the tonsils or in other parts of the body.

The kidneys in this group were all shrunken and usually more or less distinctly granular (fig 7). Their fibrous capsules were thickened and, to a varying degree, adherent. The color of the renal tissue depended on

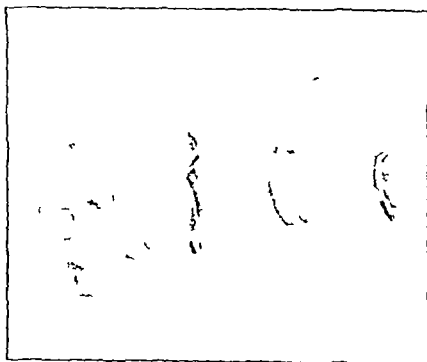


Fig 7—Shrunken granular kidney in chronic nephritis

the amount of degeneration in the numerous tubules and on the amount of congestion present. As a rule there were purple retracted vessels and between them were remnants of kidney tissue varying from a gray to a bright yellow, the latter indicating advanced fatty degeneration. On the cut surface the cortex was greatly reduced. The small blood vessels were usually more or less thickened. In the pyramids, bright white linear uric acid deposits were found in at least one fourth of the cases. Their presence was sometimes but not frequently accompanied by gouty deposits in the basal joints of the great toes or in other joints. As a result of the shrinkage of the renal tissue an unusually large amount of fatty tissue often filled in the spaces around the renal pelvis. The microscopic picture was dominated by an extensive, usually patchy, fibrosis on the one hand and the presence of islands of relatively intact renal tissue on the other. These remnants of functioning tissue often showed a marked compensatory hypertrophy. No doubt it is their existence which permits of the long continuance of the life of the patients. In the cicatrized portions the glomeruli were fibrosed, the tubules collapsed or sometimes cystic, the interstitial connective tissues greatly thickened. Degenerative changes were frequently observed in the remaining tubules and in the diseased glomeruli.

As shown in figure 8, the arteries were almost invariably diseased, not only in the kidneys but also in other parts of the body. In only three cases (about 3 per cent) were no serious lesions found in the blood vessels locally or generally in spite of the presence of severe lesions in the renal tissue. None of these patients had had high blood pressure nor had they developed cardiac hypertrophy. In twenty cases (24 per cent) the arterial lesions were of a moderate degree and limited to the kidneys. In three of these (about one sixth of this group) hypertrophy of the heart had not developed. A moderate degree of arteriosclerosis had been present in the kidneys and elsewhere in thirty-six patients (about 40 per cent). Hypertrophy of the heart was found in all of these as also in the group of twenty-four patients (about 30 per cent) with severe local and general arteriosclerosis. Among all cases of

chronic nephritis there were only six or approximately 7 per cent, without cardiac hypertrophy.

Marked changes in the chemical composition and in the morphology of the sediment of the urine were observed in many cases. Frequently in the late stages polyuria and a fixed low specific gravity had been noted. When tested, the phenolsulphonphthalein excretion was found to be greatly delayed and, toward the end, almost completely stopped.

Edema had been observed in more than half of the cases, but it had been constantly absent in a considerable number of them.

Secondary anemia had been present in about one half of the cases. In a considerable proportion of cases, however, the blood had remained perfectly normal to the time of death.

Toward the end, marked retention of urea had occurred frequently and about one half of the patients had died in uremia. In these cases ulcerative and gangrenous stomatitis and enteritis, also acute pericarditis, were frequent terminal complications. The next most important cause of death was cardiac decompensation, which had developed in one third of the cases. Cerebral softening or cerebral hemorrhage had occurred in relatively few of them.

Albuminuric retinitis had been discovered in about one fifth of all cases of chronic nephritis.

There remains an interesting group of eighteen cases in which the renal lesions were less extensive than they are in the ordinary cases of chronic nephritis but more pronounced than they usually are in uncomplicated cases of general arteriosclerosis. They form a connecting link between chronic nephritis and cardiovascular disease. They are diagrammatically represented at the top of figure 8. It is shown there that two of them were free from all vascular lesions, eight had moderate local and general arteriosclerosis, and eight more had severe local and general vascular lesions. Hypertrophy of the heart was not present in the two cases without vascular lesions, while hypertrophy of the heart had developed in three of the eight cases with moderate general arteriosclerosis and in five of the eight cases with marked general arteriosclerosis. The large majority of the patients of this intermediate group had died of diseases not connected with the renal lesions such as septicemia, mitral stenosis, diabetes, pulmonary tuberculosis and cirrhosis. The cause of death was doubtful in three cases. Of the most advanced cases, only three patients died in uremia and one of cerebral hemorrhage. With many of the patients it was definitely known that during life they had never had any nephritic symptoms. Gouty deposits were found in the kidneys in three patients and retinitis had been discovered in two.



Fig 8—Number of cases etiology and cardiovascular lesions in chronic nephritis

CARDIOVASCULAR DISEASE

While the total number of cases of nephritis was only 212 or 7 per cent of all the cases of the series,

there were 917 cases of general arteriosclerosis without serious renal involvement, representing 30 per cent of all the cases. In two thirds of these 917 cases the arterial lesions were of a moderate degree, while in one third of the cases they were of a severe nature.

Hypertrophy of the heart was present in about one third of all the cases of general arteriosclerosis. It was much more common in the severe cases, in which it was observed in two thirds of the cases, while it had occurred in less than one seventh of the cases in which the arteries were only moderately affected. The condition is shown graphically in figure 9, in which the 212 cases of nephritis with their relation to arteriosclerosis and high blood pressure are charted on the left and the 917 cases of uncomplicated general arteriosclerosis on the right. It shows that quantitatively cardiovascular disease is by far the more important problem.

An attempt has been made to separate the cases with slight focal lesions in the kidneys which are, of course, rarely absent, from those with more pronounced but still moderate focal changes in order to determine whether the degree of renal involvement had any relation to the height of the blood pressure. The result was as follows. In severe arteriosclerosis with slight renal lesions hypertrophy of the heart had developed in about 62 per cent of the cases, while in severe arteriosclerosis with more marked renal lesions it had been observed in 65 per cent of the cases. The difference is practically negligible.

In moderate general arteriosclerosis the actual number of cases of high blood pressure in cases with slight renal lesions exceeds that of those in cases with moderate renal lesions. Relatively there is probably no significant difference between the two groups because naturally the number of cases with slight renal lesions greatly exceeds those with more marked renal changes.

It may be stated, therefore, that the extent of the minor renal lesions in general arteriosclerosis is of no importance so far as the development of high blood pressure and cardiac hypertrophy is concerned.

On the other hand, the great frequency of high blood pressure in subacute and chronic nephritis even in cases with slight or moderate vascular lesions, is clearly shown on the left side of the diagram. For example, in chronic nephritis without any or with only local arterial changes, about three fourths showed hypertension. Hypertrophy of the heart was present in all cases of subacute and chronic nephritis with moderate or severe general arteriosclerosis. In subacute nephritis quite a few cases with normal arteries locally and generally had high blood pressure and the proportion was greater when there were moderate arterial changes locally or generally. It is evident therefore that hypertrophy of the heart occurs much more frequently when the arterial disease is associated with serious renal lesions.

The great majority of patients with cardiovascular disease unless killed by intercurrent disease died of decompensation or more rarely of cerebral softening or hemorrhage.

AGE INCIDENCE IN NEPHRITIS AND GENERAL ARTERIOSCLEROSIS

The striking difference in age incidence between nephritis and cardiovascular disease is brought out clearly in figure 10 in which the age incidence of nephritis is shown on the left and the age incidence of arteriosclerosis on the right.

In the construction of this diagram, all cases of subacute and chronic nephritis were segregated into the following groups:

1 Nephritis with normal arteries without cardiac hypertrophy (a large part of this group were cases of amyloid nephritis)

2 Nephritis with normal arteries with cardiac hypertrophy

3 Nephritis with moderate arterial lesions without cardiac hypertrophy

4 Nephritis with moderate arterial lesions with cardiac hypertrophy

5 Nephritis with severe arterial lesions with cardiac hypertrophy (There were no cases of nephritis with severe arterial lesions without cardiac hypertrophy.)

For each group, the relative incidence in each age group was determined and plotted. The result is shown on the left side of figure 10. The number of cases of nephritis at no age exceeded 10 per cent of all the cases in the age groups. There were few cases in the first decade altogether, three without vascular lesions. Two of these showed cardiac hypertrophy. The maximum 10 per cent was reached in the second decade,

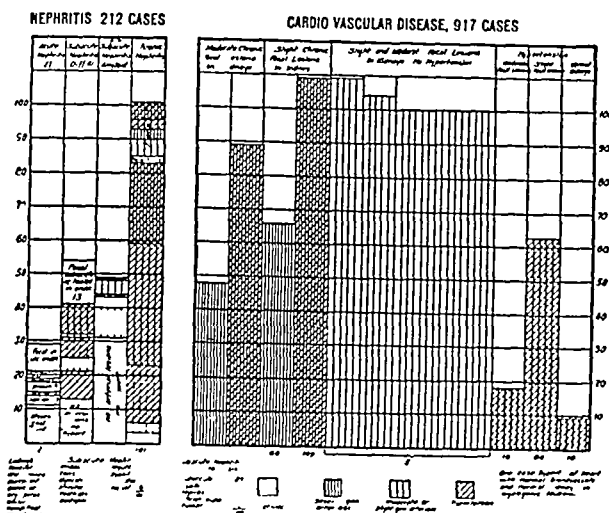


Fig 9—The combined picture all cases of nephritis on the left and all cases of uncomplicated cardiovascular disease on the right.

during which seven cases had been observed. None of these had arterial lesions and two had developed cardiac hypertrophy. During the third, fourth and fifth decades the actual number of cases is much greater but not their relative proportion to the total number of cases in each age group. The cases in the later years show more marked arterial lesions and a greater incidence of cardiac hypertrophy. From the age of 50 on the patients with nephritis become less frequent. Only three miscellaneous cases were found in the group over 70 years of age. This diminution in the number of patients with nephritis later in life is evidently due to the relatively early death of the patients.

The age incidence of general arteriosclerosis as shown in figure 10 is of a very different character. The first few cases of slight general arterial disease were observed in the third decade. Between 30 and 40 there was a moderate increase to 6 per cent and at this age already a few cases of severe general arteriosclerosis were encountered. In the group between 40 and 50, almost one fourth of the patients had developed vascular lesions. The ratio of cases with severe lesions to those with more moderate ones was approximately 1 to 5. Between 50 and 60 general arterial disease was found

in nearly one half of the patients the ratio of severe cases to lighter ones remaining about the same, namely, 1 to 5. Nearly three fourths of the patients showed generalized vascular lesions between 50 and 60 and the ratio of the severe cases to those with moderate changes increased to somewhat less than 1 to 2. Among the patients over 70 years of age, nearly nine tenths exhibited vascular lesions and the ratio of severe to moderate cases changed to somewhat more than 1 to 2. There was therefore a rapid increase of generalized arteriosclerosis with advancing age and the arterial lesions tended to become progressively more marked.

The frequency of cardiac hypertrophy in uncomplicated cases of general arteriosclerosis, all cases included, rose from about 25 per cent at ages between 20 and 60 to 40 per cent in patients over 60 years of age. No explanation has been found for this sudden rise from 25 per cent to 40 per cent after 60 years of

etiology of amyloid nephritis is given by the diseases that produce amyloidosis, such as chronic sepsis, tuberculosis, syphilis and malignant tumors. The indications are that in the causation of chronic nephritis also chronic septic infection of a focal character is of importance.

5 The amount of arterial involvement in otherwise similar cases of nephritis varies greatly from nothing at all to very severe lesions locally and generally.

6 In nephritis high blood pressure often develops without the presence of any arterial lesions in the kidneys or elsewhere and it is almost constant when there are arterial changes, even when they are present only locally. There are a few cases of extreme chronic nephritis without vascular lesions which do not develop any elevation of blood pressure.

7 Edema and secondary anemia are frequent complications of nephritis but their occurrence is quite inconsistent and bears no direct relation to the char-

acter or the extent of renal lesions. Edema and anemia are probably caused by the same factors that underlie the development of the nephritis. The noxious agents evidently vary greatly in their effect on the blood and the capillary blood vessels.

8 In acute nephritis the deaths are usually due to the infection that caused the nephritis. This is also true of amyloid nephritis. In subacute nephritis a considerable proportion of the patients die of the infectious process that causes the nephritis. About the same number succumb to conditions con-

nected with their renal disease. Chronic nephritis is usually the direct cause of death and most of these patients die of renal insufficiency.

9 Connecting chronic nephritis and uncomplicated cardiovascular disease, there is a small group of cases that exhibit serious but limited renal lesions. High blood pressure is not so constant in them as in typical cases of chronic nephritis. Only a few of these cases finally develop signs of renal insufficiency.

10 Numerically, general arteriosclerosis is a much bigger problem than nephritis but only one third of the cases develop disturbances in the general circulation. High blood pressure and cardiac hypertrophy occur more frequently when the lesions in the blood vessels are well marked but it may develop in individuals with nearly normal blood vessels.

11 In general arteriosclerosis, moderate focal renal lesions have no effect on the blood pressure.

12 The usual cause of death in uncomplicated cardiovascular disease is cardiac decompensation.

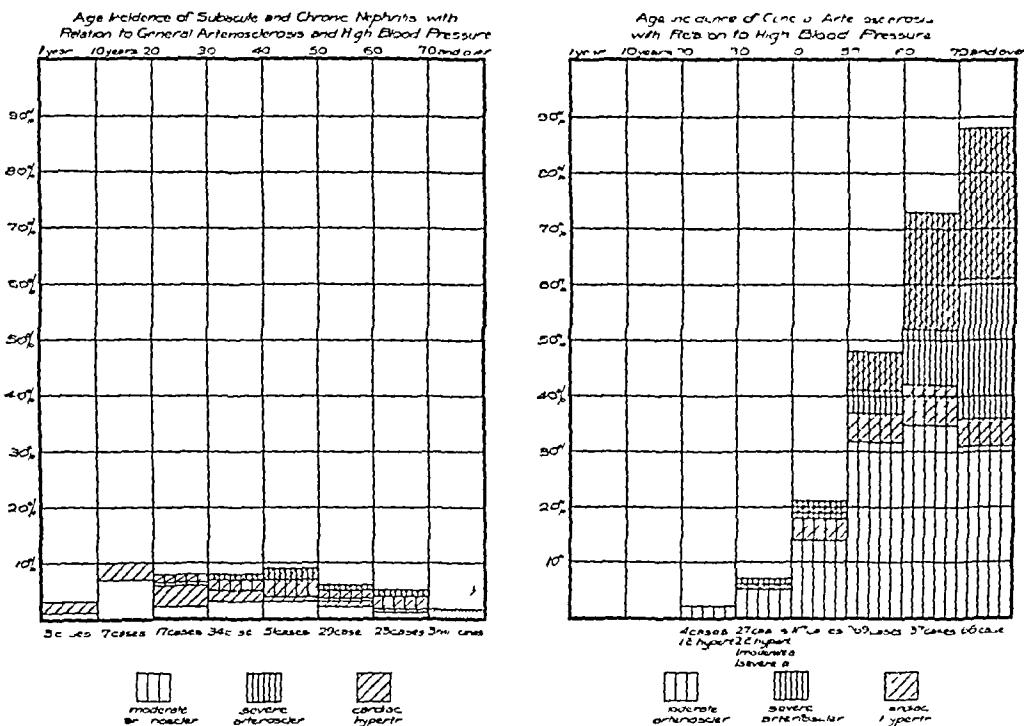


Fig. 10—Differences in age distribution in nephritis and general arteriosclerosis on a percentage basis

age. In moderate general arteriosclerosis the incidence of cardiac hypertrophy varied between 15 and 20 per cent without reference to advancing age. In marked general arteriosclerosis the incidence of cardiac hypertrophy is much higher, varying between 50 and 70 per cent without any definite relation to advancing age. The highest figure, 70 per cent, was found in the age group 60 to 70.

CONCLUSIONS

1 Nephritis and cardiovascular disease are so closely connected with each other that a separate consideration fails to afford a complete view of the problem.

2 The term nephritis should be reserved for cases in which there are serious diffuse inflammatory lesions in the kidneys.

3 The general run of cases of nephritis can be conveniently classified as (1) acute, (2) subacute, (3) amyloid and (4) chronic nephritis.

4 Acute and subacute nephritis are almost invariably due to septic, particularly streptococcal, infection. The

13 Nephritis often develops early. Its incidence in the different age groups remains about the same and never exceeds 10 per cent of all cases in any age group.

14 General arteriosclerosis develops late and increases rapidly and constantly in incidence, reaching nearly 90 per cent in persons over 70. The relative frequency of high blood pressure in general arteriosclerosis at different ages is about the same except late in life, when it seems to be considerably higher.

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INTRATHORACIC GOITER *

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Still too frequently patients are seen with intrathoracic goiter that has escaped recognition even in competent hands. This is due to the fact that a meager symptomatology has not seemed to warrant taking a roentgenogram of the trachea. Since the treatment of intrathoracic goiter is essentially surgical, it is of advantage to practice this early, before the goiter has become too large, adherent or even malignant. As a consequence, I am again calling attention to this disease by presenting a review of ninety-one cases and of the literature, particularly of those papers which have appeared during the past fifteen years. Sixty-six of the cases are from the Surgical Clinic of the University of Berne,¹ the remainder are from the Billings Hospital.

That goiter may extend deep into the thoracic cavity was observed as early as 1749 by the Bernese anatomist Albrecht von Haller,² in the dissecting rooms at Goettingen. One of the first clinical cases was reported by Dubourg³ in 1826. Death occurred suddenly from strangulation and at necropsy he found what appeared to be a right partial intrathoracic goiter. Adelman,⁴ in 1828, recognized a malignant intrathoracic goiter in a man of 40. This occurred on the left side, infiltrated the surrounding muscles, and was adherent to the cervical and upper thoracic viscera. In 1851, Bonnet⁵ called attention to those forms which compress and deviate the trachea. Mahrd,⁶ in one of the first monographs (1879), collected reports of eleven cases, all from the French literature. Wuhrmann's summary of the previous reports (1896) marks the end of the early periods, since in 1895 Roentgen announced the discovery of the "shadows," which were soon applied (1899) to the recognition of intrathoracic goiter⁷ and which have since become so important in its diagnosis.⁸ Wuhrmann collected and analyzed reports of ninety-one cases, sixteen of which were malignant. His mono-

graph is still a mine of information for students of this disease, as it lays the foundation for subsequent studies. The principal addition since its publication has been the roentgenologic evidence.

The simple classification of intrathoracic goiter introduced by Wuhrmann is somewhat confused at present for two principal reasons: first, the subsequent introduction of numerous descriptive terms, and, second, the varying opinion regarding the designation of the partial forms. For this reason, statistical studies are difficult and may be unclear.¹⁰ The thoracic cavity is bounded above by a plane, convex superiorly, extending from the upper manubrium across the top of the first thoracic vertebra and laterally along the first ribs. At rest, ordinary goiters frequently extend through this opening into the thoracic cavity. On swallowing, straining or otherwise increasing the intrathoracic pressure, the lower poles of these goiters are drawn above this plane, or pushed above by the action of the pleura. These are the deep goiters (*struma profunda*). They are readily recognized since, when the patient swallows or strains, then lower poles rise and may readily be palpated above the manubrium or behind the clavicles. Figure 1 presents an excellent example of this type since the lower pole of one lobe was formed by a calcified goitrous nodule, A, whose movements could be followed, both by palpation and fluoroscopically. The important criterion is that this type moves out of the thorax on swallowing or straining. It is not a true intrathoracic form.

The total or complete intrathoracic forms may occur with or without a cervical goiter. If they occur without a cervical goiter, or simultaneously with the absence of a lobe or the isthmus¹¹ they are readily classified since they lie entirely below this superior plane of the thorax. They may occur as distinct lobes attached to a cervical goiter by a narrowed strand of goitrous tissue. They are very rare as goiters developing independently in aberrant thyroid tissue.¹² To some this is the only true intrathoracic goiter.

The partial forms seem to be the most confusing since they are intermediate between the deep and the total intrathoracic goiter. They are always accompanied by a cervical goiter, a greater or lesser part of which extends into the thoracic cavity and remains there even on swallowing or straining. Those that grow toward the median line and anteriorly are commonly called retrosternal, substernal, median or mediastinal. Those more lateral in position are designated



Fig. 1—Deep goiter showing the intrathoracic position of the calcified lower pole A with the patient at rest.¹

* From the Department of Surgery of the University of Chicago.

¹ Read before the Section on Surgery, General and Abdominal, at the Eighty-First Annual Session of the American Medical Association, Detroit, June 25, 1930.

² By permission of Prof. F. de Quervain.

³ Von Haller, Albrecht, *Disputationes Anatomicae Selectae*, Goettingae, Vandenhoeck, 1746, 1751, 7, 96, 1749.

⁴ Dubourg, M., *Hypertrophie du corps thyroïde, tumeur dans le médiastin antérieur*, donnant lieu aux symptômes d'une hypertrophie du cœur, *Bull. Soc. anat. de Paris*, 1, 138, 1826.

⁵ Adelman, A., *Beiträge zur Pathologie des Herzens, der Schilddrüse und des Gehirns*, *Jahrb. d. Phil. med. ge. zu Würzburg*, 1, 104, 1828.

⁶ Bonnet, B., *Mémoire sur les goitres qui compriment et déforment la trachée*, *Gaz. med. de Paris*, 1851, 1.

⁷ Mahrd, Charles, E., *Étude clinique sur le goitre plongeant ou retrosternal*, *Thèse de Paris*, 1879.

⁸ Wuhrmann, F., *Deutsche Zeitschr. f. Chir.*, 13, 1, 1896.

⁹ Schuff, A., *Demonstration von intrathoracischen Struma*, *Zeitschr. d. Verze. in Wien*, Oct. 27, 1890, *Wien klin. Wchnschr.*, 12, 1111, 1899.

¹⁰ Leuk, R., *Roentgendagnostik der intrathorakalen Tumoren*, Vienna, Julius Springer, 1929, p. 361.

¹¹ Higgins, C. C., *Intrathoracic Goiter*, *Arch. Surg.*, 15, 595 (Dec.) 1907.

¹² Noehren, A. H., *Am. J. Surg.*, 29, 192 (Aug.) 1922.

¹³ Wegelin, C., *Pathologie der Schilddrüse*, *Handb. d. allg. u. spec. Path. u. Bact.*, 1926, 10, 1.

¹⁴ Curtis, C. M., *Wiener med. Wchnschr.*, 1930, 52, 1930.

lateral, suprapleural and retroclavicular or, more frequently, subclavicular. It is clear, however, on examination of the skeleton that a low goiter may be subclavicular without being intrathoracic. Some extend behind the trachea or esophagus and become the retrovisceral forms.¹³ They have been further subdivided

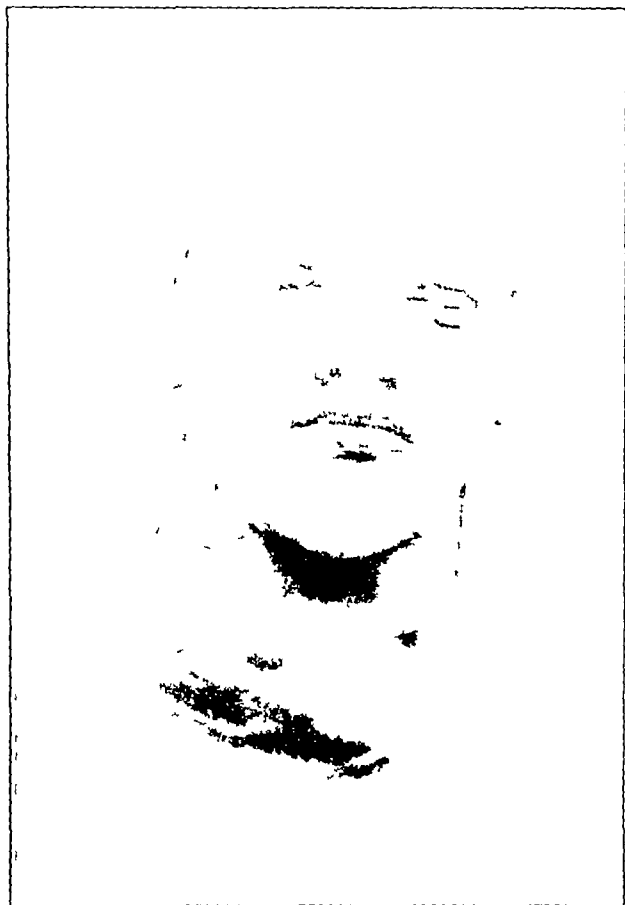


Fig. 2—Partial intrathoracic goiter with venous obstruction and medusa head.¹

as lying ahead of the large vessels, prevascular types, or behind the large vessels, retrovascular types.¹³ Regarding the superior plane of the thorax as the boundary line and the effects of swallowing or straining on its movement, it is readily possible to determine the type of the goiter in question both at the physical and the fluoroscopic examination, and at operation. The cases considered here consist of eighty-six partial and five total intrathoracic goiters.

The reported incidence of intrathoracic goiter presents great variations, from 6 to 32 per cent,¹⁴ for two principal reasons: first, the irregularities of classification, and, second, the relative prevalence of endemic goiter. Higgins' collection of the statistics reveals the variation introduced by failing to differentiate deep goiter from the partial intrathoracic forms. It is apparent that intrathoracic goiter is more frequent in regions where endemic goiter is prevalent.¹⁵ This is evident in the present series. Twenty-four per cent of 270 successive thyroidectomies in the Berne clinic

revealed total or partial intrathoracic goiter, while but 15 per cent of similar operations at the Billings Hospital are so regarded. Berne is nearly in the center of a region of severe endemic goiter. The incidence of intrathoracic goiter in the Middle West is evidently between 10 and 15 per cent,¹⁶ with between 1 and 2 per cent of total intrathoracic forms.

Intrathoracic goiter may occur at any age. Congenital cases are rare.¹⁷ It is essentially a disease that is recognized in middle life. Higgins finds it commonest in the fifth and sixth decades. Pemberton gives the average age as 46.11 years. It is frequently stated that it usually occurs after the age of 40. However, the average age of the sixty-six Berne patients was but 34 years, in the Chicago cases it was 49 years. Our youngest patient was 13 years of age, the oldest 70. It is more common in women. This is reported as in essentially similar proportion as nodular goiter is more frequent in females.¹⁸ Our cases, however, show an even greater preponderance. Jackson¹⁹ reports twenty-three of twenty-five total forms in women.

Intrathoracic goiter is nearly always nodular and frequently cystic in character.²⁰ Only 3 of Higgins' 100 total cases were diffuse goiters. Jackson states that 95 per cent are nodular. Only two of our ninety-one cases were diffuse colloid forms, the remainder were nodular (struma nodosa) or nodular and cystic. Intrathoracic goiter is thus of the endemic type, which accounts for its greater frequency in regions of severe endemism. Developing from the lower poles or isthmus, the nodular or cystic projection enters the superior strait of the thorax. Further intrathoracic development is facilitated by three principal factors: breathing, particularly deep inspiration, muscular action,



Fig. 3—Total intrathoracic goiter, malignant with pulmonary metastases, pressure on azygos vein and right hydrothorax.

ity in flexing and rotating the head,²¹ and the nonresistance of the more pliant structures of the superior

¹³ Crotti, Andre. *Thyroid and Thymus*. Philadelphia: Lea & Febiger, 1922. Kienbock, R. *Med. Klin.* 4: 488, 1908.

¹⁴ Higgins (footnote 10). Hunermann, T. *Arch. f. klin. Chir.* 128: 202, 1924. Leiner, J. H. *New York State J. Med.* 110: 190 (Aug. 2), 1919.

¹⁵ Hunermann (footnote 14). Krecke, A. *München med. Wchnschr.* 67: 371 (March 26), 1920. Czermak, H. *Arch. f. klin. Chir.* 122: 843 (Feb.) 1923. Monnier, E. *Beitr. z. klin. Chir.* 54: 23, 1907.

¹⁶ Higgins (footnote 10). Pemberton, J. de J. *Surgery of Substernal and Intrathoracic Goiters*. *Arch. Surg.* 2: 1 (Jan.) 1921.

¹⁷ Wegelin (footnote 12). Terry, W. I. *S. Clin. N. Amer.* 2: 48 (April), 1922.

¹⁸ Pemberton (footnote 16).

¹⁹ Jackson, A. S. *Goiter*. New York: P. B. Hoeber, 1926.

²⁰ Wegelin (footnote 12). Curtis, G. M. *S. Clin. N. Amer.* 10: 313, 1930.

²¹ Lahey, F. H. *Diagnosis and Management of Intrathoracic Goiters*. J. A. M. A. 75: 163 (July 17), 1920.

mediastinum. Gravity is mentioned by some, as well as the frequent movement of the thyroid in swallowing. Thyroptosis, more common in patients with emphysema (von Eiselsberg), predisposes to an intrathoracic extension.

As the nodular mass develops, its cervical attachment may become attenuated, and the intrathoracic extension thus becomes more freely movable (*struma mobilis*).



Fig 4—Total intrathoracic goiter, oblique view after thoracentesis showing the large cystic mass.¹

These "diving goiters" (*tauchkropf*) readily disappear into the thorax on deep inspiration, reappearing suddenly in the neck on straining. This may be observed fluoroscopically.²² Certain cervical forms later descend, enlarge and eventually become caught under the nonyielding bony ring of the superior thoracic aperture (*Wanderkropf* Wolfier). Acute incarceration of this type has caused fatal suffocation.²³ Diving or wandering forms may remain thus imprisoned for a long time and then suddenly reappear in the neck following an acute increase in the intrathoracic pressure or a sudden extension of the head (*springkropf*). Such an acute dislocation has led to severe hemorrhage.²⁴ Unattached intrathoracic goiters are very rare.² An intrathoracic extension may be overlooked during a thyroidectomy.²⁵

Intrathoracic goiter occurs more frequently on the left side.²⁶ Wulffmann's early summary, however, showed a more even distribution, 37 per cent originating on the right side, 33 per cent from the isthmus and but 30 per cent from the left side. The explanation is that the majority of those originating in the isthmus are deviated to the left by the anterior lying innominate artery. This is particularly well shown in one of Wegelin's¹² illustrations (fig 104). Bilateral forms occur²⁷

Genuine exophthalmic goiter most rarely becomes intrathoracic, however, it often forms a deep goiter. This demonstrates the significance of the nodules in the pathogenesis of the intrathoracic forms.

The symptoms of intrathoracic goiter are principally those of mechanical pressure on the mediastinal structures. Thyrotoxicosis is not so common in endemic regions. Only 3 per cent of the Berne cases presented toxic symptoms. Dyspnea is the most common single symptom, although it may be slight or even absent in masked total forms.²¹ Intermittent attacks of suffocation or of strangling occur, particularly with certain positions of the head.²² Bronchostenosis with its sequelae has been described.⁹ Intrathoracic goiter is a considerable complication to major surgery.²³ Dysphagia is not so frequent and occurs particularly with the retrovisceral forms, or with those on the left side.²⁴ By pressure on the esophagus, the goiter may predispose to the formation of pulsion diverticula.²⁵ Unilateral recurrent palsy more commonly left, occurs in about 15 per cent of the cases.¹⁸ Bilateral palsy may occur³⁶ (figs 3 and 4). Phrenic palsy has been reported.³⁷

The cervical veins are congested and are obviously dilated in about 15 per cent of the cases.¹⁹ A medusa head may thus occur about the base of the neck (fig 2). Marked varicosities of the axillary veins due to pressure stasis have been described,³⁸ and similarly hydrothorax may develop (fig 3). The innominate vein may even become obliterated (Phillips). Schultze¹² reported chylothorax subsequent to pressure on the opening of the thoracic duct.

One of the unsolved problems of intrathoracic goiter is its mechanical effect on the heart.³⁹ Partial tracheal stenosis causes changes in the respiratory mechanism. Obstruction to the return flow of blood through the superior cava produces changes in the cardiac circulation. Rose thought (1878) that these mechanical effects act on the heart.

As a consequence the concept of a "mechanical goiter heart" has been frequently considered. It is difficult to separate the effects of thyrotoxicosis. Many of the observations were recorded before the advent of accurate determinations of the basal metabolism. Sulzer found experimentally that not all forms of tracheal stenosis



Fig 5—Partial intrathoracic goiter, preoperative compression and deviation of the trachea.

cause cardiac dilatation.⁴¹ This is recognized clinically. The interrelationship is not clear.

The diagnosis of intrathoracic goiter is readily made by the x-rays. The clinical symptoms and signs of

22 Mahard (footnote 1). Wegelin (footnote 12). Krecke (footnote 15).
23 Distler A. *Riforma med* 45: 1123 (Aug 1919).
24 Delatour H. B. *Ann Surg* 140 (Aug) 1918.
25 Krecke (footnote 15). Molnar A. I. *Klin Wchnchr* 1: 470 (Feb 25) 1922.
26 Schwöerer B. *Beitr z Klin Chir* 121: 50 (1) 1914.
27 Wegelin (footnote 12). Pemberton (footnote 14).
28 Hunermann (footnote 14). Judd E. S. *Internat Clin* 1: 19 1920.
29 Hunermann (footnote 14). Giermak (footnote 15). Pemberton (footnote 16). Curtis (footnote 20). Judd (footnote 28). Merritt (footnote 15).
30 Lam on O. F. *Surg Gynec Obst* 27: 9 (Oct) 1918. *Abell I. S. Clin N. America* 2: 15 (Oct) 1919.

31 Curtis (footnote 20).
32 Lahey F. H. *J. Boston M. & S. J.* 17: 341 (March 8) 1917.
33 Seelig M. C. *S. Clin North America* 1: 19 (Dec) 1922.
34 Lam on (footnote 30).
35 Bouvier E. *Arch f Klin Chir* 121: 507 1914. Halberst A. *ibid* 122: 89 1923.
36 Hubert Louis. *Surgical Thyroid with Bilateral Laryngeal Paralysis*. *J. A. M. A.* 50: 142 (March 24) 1919.
37 Richfo d B. K. *Am J. M. Sc* 100: 410 (Sept) 1919.
38 Schwöerer (footnote 26). *Diagnosis and Surgical Treatment of Intrathoracic Goiter*. *J. A. M. A.* 71: 97 (Feb 1) 1912.
39 Crichton E. *Klin Chir* 247: 27 (1) 1916.
40 Silber F. *Deutsche Zeitschr f Chir* 201: 21 1927.

importance are dyspnea, choking and strangling attacks, and laryngeal and tracheal deviation.⁴¹ Intrathoracic goiter should always be considered in the evaluation of obscure asthmatic conditions.⁴² Fluoroscopy is of great aid in the differential diagnosis of the intrathoracic tumor. It is generally stated that intrathoracic goiters move on swallowing. This has not been my experience in all cases. Carcinoma with surrounding

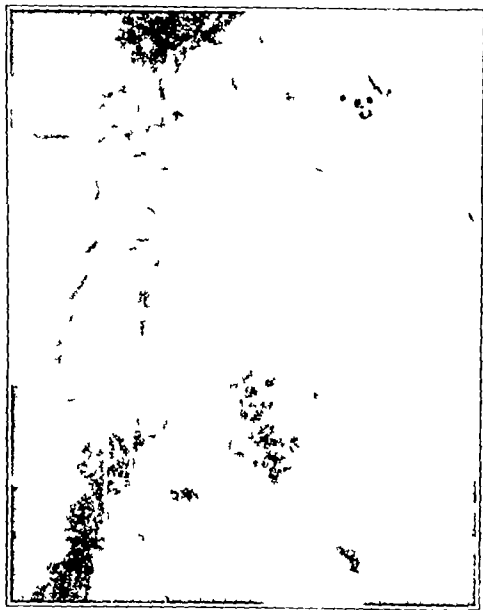


Fig. 6—Partial intrathoracic goiter preoperative compression and deviation of the trachea.⁴¹

infiltration, a narrow connecting stalk between the thoracic and cervical goiter and fixation at the inlet all tend to immobilize the intrathoracic shadow under the fluoroscope.

The prognosis of intrathoracic goiter is, in brief, that of nodular goiter developing within the superior mediastinum. The tendency of nodular goiters to become toxic, to grow, to become acutely enlarged by hemorrhage, to become cystic, to become inflamed and to develop carcinoma have been considered as indications warranting their removal. These changes are accentuated in consequence when the goiter lies among the vital structures of the superior mediastinum. Strumitis with resulting adhesions is more frequent in endemic regions. It occurred in 48 per cent of the Berne cases. Malignant changes occur in between 2 and 3 per cent of the cases, although Wuhrmann's original figures were much higher.

I have discussed elsewhere⁴³ the usual occurrence of degenerative changes within the blood vessel walls of nodular goiters. In intrathoracic goiter, as the result of mechanical interference with the return circulation, capillary dilatation occurs and even becomes cavernous hemangiectasia.⁴³ Calcification is frequent⁴² (fig. 1). Arteriosclerosis independent of the generalized form, as well as hyaline change, is common in the thyroid arteries of nodular goiters even in young persons. These degenerative changes predispose to hemorrhage and consequent cyst formation. Evidence of hemorrhage is found in nearly all nodular goiters. It may be interstitial, however, it usually occurs in the nodules

and cysts. The occurrence of acute apoplexy is well recognized. It rarely leads, however, to compression of the trachea severe enough to cause an acute suffocation.⁴⁴ The rupture of the larger sclerosed goitrous vessels resulting in sudden death is likewise infrequent.⁴⁵ Nevertheless, these vascular changes definitely increase the morbidity of nodular goiter.

The operative mortality is very low.⁴⁶ Matth⁴⁷ has reported 219 successive cases without a fatality. It is apparently greater outside of endemic regions, where one contends in addition with a greater incidence of associated severe thyrotoxicosis.⁴⁸ There has been no fatality in our series of cases in which operations have been performed. Carcinoma with bilateral recurrent paralysis and pulmonary metastases was the cause of death in one patient, aged 70 (figs. 3 and 4). In view of our present knowledge of this disease, it would seem wiser to advise the removal of an intrathoracic goiter while it is still to be readily luxated rather than submit the patient to the nodular possibilities plus those eventual changes leading to an increase in the difficulties of excision.

The treatment of intrathoracic goiter is essentially surgical. Luxation and excision is the common procedure and was employed in all our cases. As the goiter grows into the thorax it pushes ahead of it cervical and later intrathoracic fascia and forms in most cases a condensed fascial envelop about the true thyroid fascia and capsule. It maintains its blood supply from above and rarely makes secondary vascular connections of any magnitude through the surrounding fascia. The recognition of these facts is of the greatest importance in the surgical removal. It is of advantage to aspirate cysts. When the goiter is adherent or larger than the thoracic outlet, portions have first been removed from the center (evisceration, Kocher). When morcellement is done and goitrous tissue left behind, there occurs a draining sinus of long duration until finally the necrotic tissue is passed.⁴⁸ The sternum was formerly split its entire length to facilitate removal of larger intrathoracic forms.⁴⁹ Resection of the manubrium and anterior mediastinotomy have likewise been practiced.⁵⁰ Experience has shown, however, that a simple notching of the manubrium to the depth of 5 or 6 cm is nearly always sufficient.⁵¹



Fig. 7—Partial intrathoracic goiter resection of trachea to normal eight and one half months after excision.

The x-rays have been used in the treatment of intrathoracic goiter with varying results.⁵² Since practically all intrathoracic goiters are nodular and since cystic degeneration and

41 Clute H. M. S. Clin. North America 9 1309 (Dec.) 1929.
42 Felberbaum D. and Finesilver B. Am. J. M. Sc. 171 218 (Feb.) 1926.

43 Curtis (footnote 20) Curtis G. M. and Delaney P. A. Cavernous Hemangiectasia Occurring Within a Nodular Goiter Arch. Path. 10 580 (Oct.) 1930.

44 Schwöerer (footnote 26) Clute (footnote 41).
45 Haim E. Arch. f. Klin. Chir. 151 595 1928.
46 Crotti (footnote 13) Judd (footnote 28) Lahey (footnote 21).
47 Matth H. Schweiz. med. Wchnschr. 8 852 (Aug.) 1927.
48 Bevan A. D. S. Clin. North America 1 957 (Aug.) 1921.
49 Jehn W. Deutsche Ztschr. f. Chir. 133 25, 1915. Plenk A. Ibid. 156 378 1920.
50 Alemán O. Acta chir. Scandinav. 60 135, 1926. Key E. Nord. med. Ark. 14 1 1914.
51 Sauerbruch F. Schweiz. med. Wchnschr. 8 859 1927.
52 Lenk (footnote 9) Hubert (footnote 36) Rachford (footnote 37). Grier G. W. Am. J. Roentgenol. 13 327 (April) 1925.

calcification, together with marked vascular degenerative changes, are so frequent, they are as a rule refractory to irradiation.⁹

That the trachea is deviated and compressed by intrathoracic goiter (figs 5 and 6) was recognized long before the advent of the x-rays.⁵ Excision of the goiter results in an immediate and often remarkable improvement in the condition of the patient. Mention has been



Fig 8—Partial intrathoracic goiter; return of trachea to normal eight and one half months after excision.^{1,2}

made of changes occurring in the position of the deviated trachea following thyroidectomy.¹³ However, it is apparent that the return of the trachea to normal following the removal of the deviating goiter is not generally known. As a consequence, it has been of interest to follow the trachea roentgenologically in a number of cases after the thyroidectomy. I have yet to see a case in which it failed to return to its approximate normal position. This is demonstrated in figures 5, 6, 7 and 8. Needless to state, there have not been any cases of severe tracheomalacia.¹⁸ Within ten days following operation, the trachea has already definitely returned toward its normal position.

SUMMARY

Total and partial intrathoracic goiter is frequently unrecognized owing to the fact that a roentgenogram is not made of the trachea. It is nearly always nodular, frequently cystic, and its vessels usually reveal degenerative changes and associated hemorrhage. The prognosis is that of nodular goiter developing within the superior mediastinum. The treatment is surgical removal and it is of advantage to practice this before the goiter has become too large, adherent or even malignant. The cases should be individualized. The operative mortality is very low. The compressed and deviated trachea returns to its normal position following the thyroidectomy.

53 Noehren (footnote 11) Alemin (footnote 50) Laher F H
S Clin North America 1 641 (June) 1921

The Argentaffin Cells—While it seems conclusive that the argentaffin cells give rise to the carcinoids of the intestinal tract no definite conclusion has been reached with regard to their significance in inflammatory processes.—Pessin S B
Arch Path, February 1931

TUMORS OF THE PARATHYROID GLAND *

CLARENCE G. TOLAND, M.D.
LOS ANGELES

During recent years the parathyroid glands have come into rather special prominence owing to their apparent functional connection with calcium metabolism and tetany. In consequence, parathyroid tumors, instead of being pathologic curiosities, have assumed a more important clinical rôle. I have recently observed two cases of these fairly rare tumors, but before giving the details I will give a short synopsis of the present clinical aspects of the parathyroids and their pathology.

The parathyroids were first accurately described in 1880 by Sandstrom,¹ who apparently, however, held the view that they were undeveloped embryonic thyroid tissue.

In 1898, Gley² showed that tetany following parathyroidectomy did not occur unless the external parathyroids were removed, although they were still considered as part of the thyroid gland.

The parathyroids may be intrathyroid or extrathyroid. According to Guleke³ the human parathyroid may occur in three types: (1) the compact type, as seen in the fetus, (2) the reticular and (3) the lobular. The two latter are seen in adults, but all three types may be observed in the same individual.

FUNCTIONS OF THE PARATHYROIDS

That the parathyroids have a vital function is admitted since their complete extirpation results in tetany and death. When apparent extirpation has not produced death, it has been found that accessory parathyroids were present. The occurrence of accessory parathyroids is not uncommon.

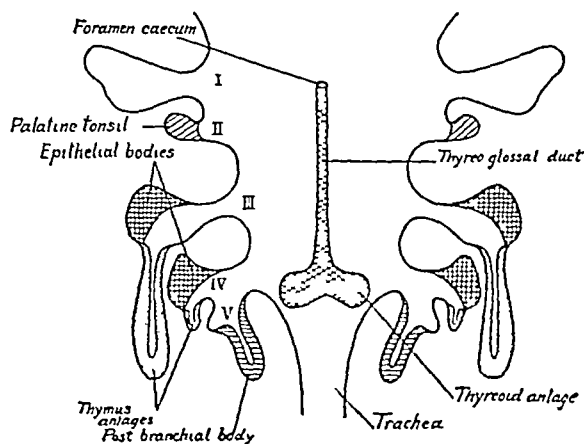


Fig 1—Diagram in ventral view of the pharynx and pharyngeal pouches showing the origin of the thymus and thyroid glands and of the epithelial bodies (modified after Groschuff and Kohn). I, II, III, IV, and V first, second, third, fourth, and fifth pharyngeal pouches.

Present knowledge of the functional importance of the parathyroids may be said to have begun with the researches of MacCallum and Voegtlin,⁴ published in

Read before the Section on Surgery, General and Abdominal at the Fifth First Annual Session of the American Medical Association, Detroit, June 25, 1930.

1 Sandstrom, *Upala Lakaref forh* 15 1880

2 Gley, *Compt rend Congr internat de med* Moscow 1897, p 24

3 Guleke, *Neue Deut. Chirur* 9 1913

4 MacCallum, W. G. and Voegtlin, Carl, *On the Relation of the Parathyroid to Calcium Metabolism and the Nature of Tetany*, *J Biol Chem* 19 51 1921

1908 They showed that removal of the parathyroids in dogs resulted in hypocalcemia in the urine and feces. Other investigators showed later that the metabolic changes, apparently governed by the parathyroid secretion, not only included lowered serum calcium but diminished excretion of phosphorus. Tetany was due to the diminished calcium content of the blood serum.

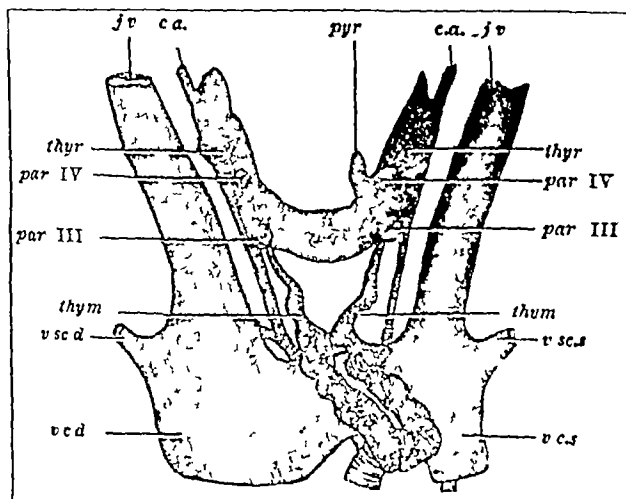


Fig 2—A reconstruction of the thymus and thyroid. The thymus lies in front behind the left innominate vein. *thyr* thyroid, *thym* thymus, *par IV* parathyroid of fourth pouch, *par III* parathyroid of third pouch, *pyr* pyramidal lobe of thyroid, *c a.* carotid artery, *j v* jugular vein.

Further proof of the importance of the parathyroid hormone in calcium metabolism was furnished by Collip⁸ and others, who showed that the injection of parathyroid extracts in parathyroidectomized dogs led to a definite mobilization of calcium in the blood stream, even if the calcium had to be depleted from other tissues.

So far as present knowledge goes, at least one, if not the most important, function of the parathyroid secretion is to maintain the serum calcium level of the blood at a constant threshold.

PARATHYROID TUMORS

Although what were undoubtedly parathyroid epithelial tumors were described by Wolfer under the name of fetal adenomas and by Kocher under the name of glycogenous goiters, DeSanti⁹ was the first, in 1898, to refer to them distinctly as parathyroid tumors.

It follows from what has previously been said that any hyperplastic or neoplastic increase of parathyroid tissue might be expected to be followed by important metabolic functional changes and, therefore, such tumors become clinically important.

According to Langhans¹⁰ classification, parathyroid tumors, which are almost always adenomas, may be divided into (1) intrathyroid parathyroidomas, i. e., when the parathyroid occurs within the thyroid, and (2) extrathyroid parathyroidomas. The first corresponds to Wolfer's fetal adenoma and the second to Kocher's glycogenous goiter.

The histologic characters of parathyroid tumors allow of their clear differentiation from epithelial tumors of the thyroid since parathyroid epithelium is well differentiated from that of the thyroid.

Pure parathyroid hyperplasia, as distinct from adenomatous growths, undoubtedly occurs frequently, especially when one or more of the parathyroids are absent or fail to function. It is a question whether some of the reported cases of parathyroid tumor were not really compensatory hyperplasias. It is not always easy, even histologically, to distinguish between hyperplasia and adenoma, especially when the latter is atypical. In such cases the tissue may perhaps be determined by other clinical evidence, such as osteomalacia. This does not mean that osteomalacia is by any means usual or to any important degree associated with parathyroid enlargement but only that occasionally such an association or some other bone abnormality may be found, as in cases reported by Schlagenhauser⁸ and Harbitz.⁹

Also, a compensatory parathyroid enlargement may follow removal of one or more glands, as in the case reported recently by Guy.¹⁰ In this case, ten months after the removal of an adenomatous parathyroid, nodular swellings appeared in the position of the other parathyroids, which the author ascribed to compensatory hyperplasia rather than to metastases.

A parathyroid adenoma may become malignant. If intrathyroid, the only question that arises is one of differentiation from a particular type of malignant tumor of the thyroid which Langhans has termed a proliferating struma. This similarity has been noted also by Kocher and other investigators. Fasiani¹¹ states that Langhans considered that the parathyroid tumor could be distinguished by the presence of distinct canals with glycogen-containing cells now known as Knustner's canals.

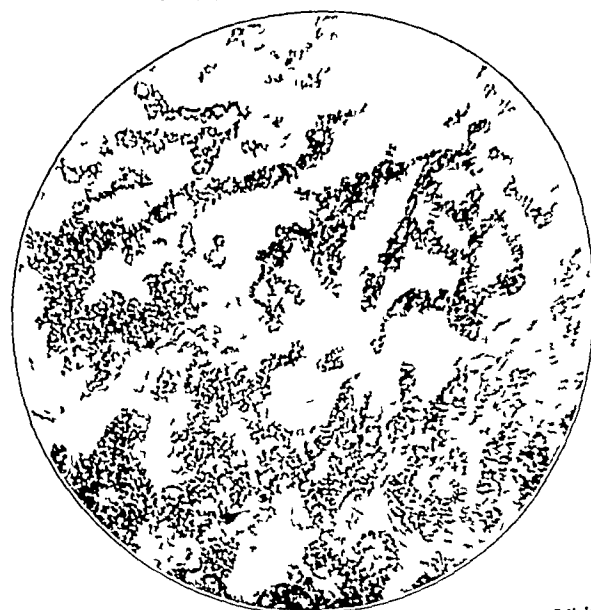


Fig 3—Carcinoma of parathyroid gland under low power. Cellular areas composed of irregular atypical cells. In the centers of these cellular areas are clear spaces (possibly colloid). The cellular areas are separated by a rather wide strip of reticular tissue which composes the stroma. Many nuclei are hyperchromatic. The section lacks orderliness and arrangement and shows the characteristics of malignant changes.

STATISTICAL DATA

Berard and Alamartine¹² in 1909 collected reports of twenty-nine cases (including one personal case) of parathyroid tumors from the literature. This number

8 Collip J. B. *J. Biol. Chem.* 63: 395 (March) 1925.

9 DeSanti cited by Fasiani (footnote 11).

7 Langhans. *Virchows Arch. f. path. Anat.* 175: 1907.

8 Schlagenhauser. *Munchen med. Wchnschr.* 16: 56 1916.

9 Harbitz F. *J. M. Research* 32: 361 1915.

10 Guy C. C. *Tr. Chicago Path. Soc.* 12: 333 (June 1) 1927.

11 Fasiani G. M. *Adenoma maligno della paratiroides*. *Arch. ital. di chir.* 7: 427 (July) 1923.

12 Berard and Alamartine. *Lyon chir.* 1: 721 1909.

has more recently been increased to forty by Pepere¹³ Of Berard and Alamartine's twenty-nine tumors, twenty-four were pure parathyroid adenomas and five were mixed, i. e., containing thyroid and parathyroid epithelium Sixteen were intrathyroid and thirteen were extrathyroid in situation Of the twenty-nine, a few (six) had passed unperceived during life and

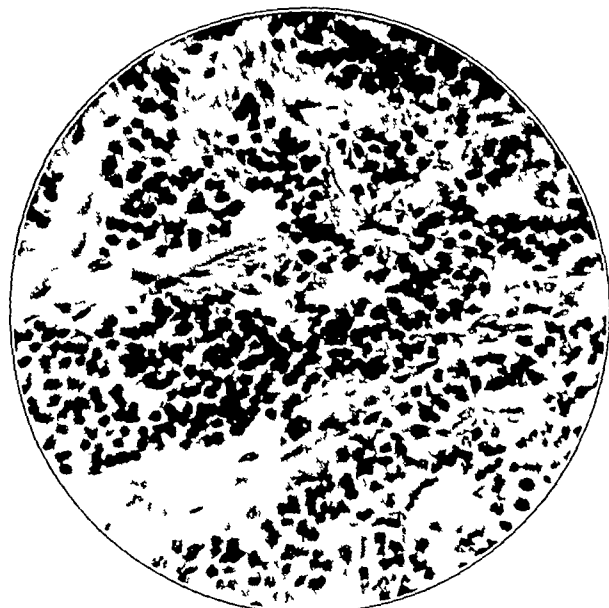


Fig 4—Carcinoma of parathyroid gland under high power. Irregular atypical cells of various sizes and shapes. The nuclei are quite large and there is noted in many nuclei a large deeply staining nucleolus. The section is quite cellular with an admixture of a moderate amount of stroma between the thickly cellular areas. The cells are arranged in haphazard fashion. Mitotic figures in this section are hard to distinguish definitely.

were found at autopsy, in fourteen the tumor was the only symptom, in nine there were symptoms of compression. Five of the tumors were undoubtedly malignant with ganglionic, visceral or osseous metastases.

Fasiani has recently reported a case of malignant parathyroid tumor, the size of a fist, invading the left lobe of the thyroid in a woman, aged 65. He gives detailed histologic observations. Preoperatively this suggested a malignant thyroid tumor and postoperatively its nature was established only by the histologic investigation. This tumor was distinguished by a richness of chromophil cells both disseminated and massed or in strings. He did not distinguish Kursteimer's canals. Fasiani believes that this tumor arose from an inclusive parathyroid or from rests of parathyroid tissue in the thyroid.

Fasiani says that only eight cases of malignant parathyroid tumors are reported in the literature. This of course, refers only to primary malignant tumors not to metastases from malignant growths elsewhere such as in the two cases reported by Thompson¹⁴ following carcinoma of the breast and of the neck region respectively. Ferrero and Sacerdote¹⁵ in 1925 reported a case of parathyroid tumor with metastases in the right femur and in the right temporal bone.

REPORT OF CASES

CASE 1—A woman aged 60 had noted a thyroid enlargement for eight years. This became painful and increased rapidly in

size following an attack of acute pharyngitis, three months prior to admission to the hospital. Obstructive symptoms, such as dyspnea and dysphagia, developed. She gradually lost weight. An increasing pallor was noted. She had no thyrotoxic symptoms. The examination revealed some obesity, but was essentially negative. The neck showed a large mass involving the upper pole of the right lobe of the thyroid. This was red and tender. At operation this mass in the neck was found to be densely adherent to the muscles. The mass and entire right lobe of the thyroid were removed. The pathologic report showed adenocarcinoma of the parathyroid. The patient received postoperative irradiation and died four months later from pulmonary metastasis.

CASE 2—A woman, aged 42, had had a subtotal thyroidectomy nine years prior to admission. Six years later she developed a recurrent goiter on the right side. This gradually increased in size and produced pressure symptoms, such as dyspnea and dysphagia. There were no thyrotoxic symptoms. The general health was good. The weight gradually increased.

Examination showed a large recurrent goiter involving the upper pole of the right lobe of the thyroid.

At operation the goiter was found to be firmly adherent. A resection of the right lobe was done.

The pathologic report showed an adenoma of the parathyroid and an adenomatous goiter of the fetal type.

The patient's convalescence was uneventful but she died eight months later following an operation for myosarcoma of the uterus.

902 Wilshire Medical Building

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS CURTIS AND TOLAND

DR RUSSELL M WILDER, Chicago. If the goiter can be palpated there is little danger of mistaking it, but occasionally it lies so deeply and is so completely separated from the cervical thyroid that it fails to rise when the patient swallows. The deepest intrathoracic goiters have so much room in the capacious thoracic cavity that they may cause no pressure symptoms at all. In such a case one must be on guard or the diagnosis will be missed. Like other tumors of the upper and anterior mediastinum, these masses may give rise to a sign to which, I think, Dr Middleton was the first to call attention. This is, namely, a tracheal quality to the breath and whispered

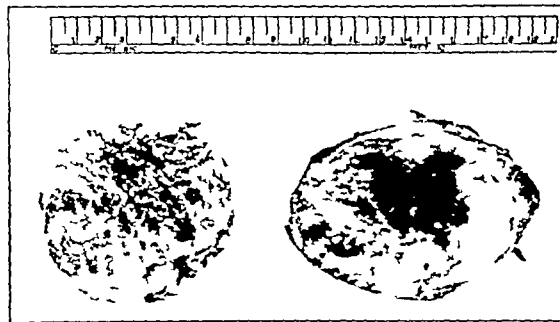


Fig 5—Gross specimen in adenoma of parathyroid

voice sounds heard when the bell of the stethoscope is applied to the manubrium of the sternum. The sign is analogous to d'Espine's sign posteriorly when the mediastinum is filled with large tuberculous lymph nodes or other tumors. Normally one hears a bronchovesicular respiration over the manubrium but when a solid mass displaces the margins of the air-filled lungs the bronchial sounds are transmitted directly to the ear and these are almost as loud as the sound obtained when the stethoscope is placed on the neck directly over the trachea. I have recently reexamined the patient whose case of hyperparathyroidism was reported from the Mayo Clinic in May, 1929. This was an instance of diffuse fibrous osteitis associated with an adenoma of the parathyroid. It is now eighteen months

13. Pepere. Le glande parathyroide. Unione Tij. E. I. Tu. in 1910.

14. Thompson. P. L. J. M. Research 24, 6, 1911.

15. Ferrero. A. and Sacerdote. C. Arch. ital. di chirurg. 14, 274.

since this tumor was removed. The immediate results of the operation were dramatic as has been true of all the cases reported heretofore. The hypercalcemia was immediately arrested, as was also the large urinary excretion of calcium. The patient's strength improved rapidly, so that within two weeks she was able to abandon crutches and walk with the help of a cane. She was seen again in April, 1929, and improvement seemed to be continuing. She had shortened in stature 2 cm, which was attributed to her being on her feet



Fig 6—Adenoma of parathyroid under low power. This section shows the cells arranged in irregular groups or cords and in some places what appears to be round tubules. The nuclei are fairly good sized and the chromatin takes a dark stain.

while the skeleton was still soft. At the present time her condition is only fairly satisfactory. She is not strong and generally uses a cane, although able to walk without it. She has some pain in the bones of her hands, feet and shoulders but not, as formerly, in other bones. She has shortened another 4 cm and weighs less than she did at the time of operation. The calcium and phosphorus of the blood are normal, and a twenty-four hour specimen of urine contained only 140 mg of calcium, which seems normal. Roentgenograms of her bones still reveal considerable porosity but no cysts. The density of the bones is, however, still far from normal. The patient was taking calcium phosphate and cod liver oil until some time in November, and when she discontinued these the general strength apparently diminished. My general impression is that this patient is still suffering, to a lesser degree, from the original disease. This may be due to another tumor, or there may now be an overfunction of the remaining parathyroid glands, or the question may be less simple than it seemed at first and the relationship of the parathyroid to the bony abnormalities less definite than was thought.

DR HOWARD M. CLUTE, Boston. Our experience in the Lahey Clinic with possible parathyroid tumors has been limited to one recent case. Clinically there was a parathyroid tumor, but microscopically the specimen removed was not positively parathyroid in origin. Clinically, however, it may be said to have been a parathyroid tumor because there was extreme muscle weakness, a marked porosity of the bones of the skeleton, and a marked hypercalcemia. It is obviously a most rare condition. In this instance removal of the tumor was not followed by ultimate recovery, since the patient died with multiple malignant metastases. In intrathoracic goiter, the position of the trachea is one of the most important things. One particular type of intrathoracic goiter to which I would call attention is the retrotracheal goiter which descends behind the trachea and pushes the trachea well forward. It may be present and undiscovered if a lateral view is not taken. The pressure symptoms which Dr Curtis has mentioned are the outstanding symptoms of importance in substernal goiters. The last thing to be mentioned is the danger of mediastinitis post-operatively. The cavity from which the goiter comes must be

drained adequately and thoroughly. We have found from experience that the drains must not be removed too early after operation. If they are, fluid collects in the superior mediastinum, with resulting infection in many cases, with difficulty in swallowing, and with fever. When this occurs, marked widening of the mediastinum and a definite beginning mediastinitis results. Mediastinitis is a dangerous complication. In this particular instance, the neck was reopened and thorough drainage of the mediastinum instituted, with ultimate cure as the outcome.

DR FRANK H. LAHEY, Boston. Intrathoracic goiter is not limited to the region where goiter is endemic. Among 8,500 patients operated on for goiter, we have had about 250 intrathoracic goiters. In intrathoracic goiter one should be careful about two points. 1. Pieces should never be left behind. The blood supply of intrathoracic goiters comes from above, the superior thyroid artery and the inferior thyroid artery, and if nearly all of the intrathoracic goiter is removed but a segment is left unvascularized below, the very things have been accomplished which will predispose to mediastinitis, fluid, necrosis and infection. If there is any infection there will be mediastinitis. If mediastinitis exists, nothing in the world in our experience, drainage, irrigation or anything else, will influence it. Mediastinal cellulitis has gone on always to a fatality. 2. The best approach technically to intrathoracic goiter is from the back of the tumor. One should not try to get into the mediastinum from in front. A pathway has already been established in back by the large vessels of the neck, and along this path of the common carotid and the internal jugular is a passage where the finger readily passes. Then the intrathoracic goiter may be separated from its surrounding layer of connective tissue, mobilized, and removed from above. The best anesthesia in our experience with these patients with intrathoracic goiter who have respiratory difficulty is a form of gas anesthesia with a tight face mask. We have occasionally had very trying times in the delivery of these large tumors through the narrow superior thoracic strait, and at that time the anesthesiologist with gas-oxygen or ethylene by pressure on the bag with a tight mask, can supply these patients with sufficient oxygen so that one has several minutes of manipulation in which to deliver this large tumor through the small upper



Fig 7—Adenoma of parathyroid under high power. The cells here are arranged in compact groups and cords with a thin stroma in between. The cytoplasm is clear. The chromatin of the nuclei takes a dark stain.

thoracic aperture, during which time the trachea is completely collapsed. Dr Clute has brought out a valuable point, which is the necessity of prolonged drainage. Because this is a large cavity which requires a long time to collapse, fluid readily reaccumulates and readily becomes infected. The later it accumulates, the less likelihood or the dangerous and fatal complications which must always be guarded against: mediastinitis. These large intrathoracic cavities often require two or three weeks of drainage.

HYPERPARATHYROIDISM

THE CLINICAL PICTURE IN THE FAR
ADVANCED STAGE*ARMAND J. QUICK, PH.D., M.D.
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It is well known that when parathyroid extract, the active principle of the parathyroid gland, is injected into an organism, hypercalcemia is produced. If these injections are continued a negative calcium balance results, with ultimate decalcification. This is followed by the formation of fibrous bone lesions, as Jaffe, Bodansky and Blair¹ have recently shown. That a condition similar to this experimental hyperparathyroidism could exist clinically was not clearly recognized until Mandl² in 1926 removed a parathyroid tumor in a case of generalized osteitis fibrosa cystica and thereby effected a prompt and apparently permanent clinical improvement. This suggested that the causative factor of osteitis fibrosa cystica was a hyperactive parathyroid. The correctness of this conclusion has been fairly well established by a series of other cases reviewed by Barr and Bulger,³ and correlated under the term "clinical hyperparathyroidism." In this paper we are presenting another case of osteitis fibrosa cystica in which a large physiologically active parathyroid tumor was found and removed. The pathologic process had advanced to such a stage that some of the bones appeared to be almost completely demineralized. The same case was reported under the title "Multiple Giant Cell Tumors" by Alexander and Crawford⁴ three years ago when the clinical syndrome of hyperparathyroidism had not been recognized. In the light of present knowledge, the patient showed at that time the typical picture of early hyperparathyroidism.

REPORT OF CASE

J. M., a white man aged 25 admitted to the Philadelphia General Hospital, June 30, 1929, had extreme deformities of almost every portion of his skeletal system except the hands, feet and head, but was free from pain and other distressing symptoms.

His family history was negative. His personal and past history, prior to the appearance of symptoms that are definitely a part of his present disease are of no especial significance. Before the onset of the present symptoms he was a well developed youth, 6 feet tall, and weighing about 200 pounds (fig. 1). He was born in the mill district of Philadelphia and at the age of 14 started working in a hosiery mill. With the exception of three months in 1925, when he was in the United States Navy, he remained a mill worker until his present condition compelled him to stop work. While in the navy he received a blow over his right jaw while boxing. This produced a moderate sized swelling which persists even now, but never progressed. The patient never used alcohol or tobacco was regular in his habits and gave no history of venereal infection.

*From the Division of Medicine Service of Dr. Schnabel and Laboratory of Biochemistry, Philadelphia General Hospital.

*This work received the annual Philadelphia General Hospital Interns Prize. Read before the Section on General Medicine, College of Physicians, March 24, 1930.

1. Jaffe H. L., Bodansky A. and Blair J. E. Production in Guinea Pigs of Fibrous Bone Lesions with Parathyroid Extract. *Proc. Soc. Exper. Biol. & Med.* 2: 710 (April) 1930.

2. Mandl F. Therapeutischer Versuch bei einem Falle von Osteitis fibrosa generalisata Mittels Exstirpation eines epithelkörperchen Tumors. *Zentralbl. f. Chir.* 53: 260 (Jan. 10) 1926. *W. G.* 17: 9 (Jul. 13) 1926.

3. Barr D. P. and Bulger H. A. The Clinical Syndrome of Hyperparathyroidism. *Am. J. M. Sc.* 179: 449 (April) 1930.

4. Alexander F. C. and Crawford W. H. Multiple Giant Cell Tumors. *Ann. Surg.* 86: 62 (Sept.) 1927.

The first intimation of the present illness was in January, 1925, when he suffered a ruptured right ligamentum patellae as the result of a fall and was operated on at the Episcopal Hospital. A roentgenogram of his knee taken at that time showed beginning bone changes. Soon after his discharge from the hospital he began to notice a marked polydipsia and polyuria, with milky urine. (It was probably at this time that he was excreting large quantities of calcium at the expense of his osseous system.) Soon after this he began to experience severe sharp shooting pains in his back, arms and legs. The pains were not relieved by medicine. Because of these pains and persistent nausea, which at this time he attributed to the odor of the hosiery dye he quit his job in August, 1926. His nausea, however, persisted. In October, 1926, while taking a bath he had a spontaneous fracture of his left femur, and in falling sustained further fractures of his right femur and right humerus, which were treated at the Episcopal Hospital. Roentgenograms taken at that time disclosed a generalized pathologic condition of the bones. "There is a generalized fibro-cystic osteitis with an atypical appearance in the different



Fig. 1.—The patient at the age of 17 years.

regions, which in the distal end of the radius and the lower end of the left femur has advanced to that of a giant cell tumor. In the regions of the elbow, it has the appearance of a chronic osteomyelitis. In the right femur the appearance suggests strongly the possibility that the process has undergone a sarcomatous degeneration.⁴ On physical examination, however, he showed very little. There was a swelling of the lower end of the left radius. A paralysis of the left true vocal cord was also noted, which was attributed to an anesthetic given eighteen months previously. While he was in the Episcopal Hospital biopsies were taken from the lower end of the left radius of the left ulna and the lower end of the right femur.

In each case the pathologic report was that of giant cell tumor. The right humerus showed excellent callus formation 100 days after the fracture. Significantly the blood calcium at this time was 15.4 mg. and the blood phosphorus 2.1 mg. He was discharged from the Episcopal Hospital May 16, 1927. While at home his deformities became progressively worse and multiple swellings over various bones appeared. In spite of his deformities he felt well except for a severe epistaxis which required medical treatment. During this period he had one attack of hematuria.

At the time of his admission to the Philadelphia General Hospital in June, 1929, he was in fairly good health. His cardiorespiratory system was entirely normal, except for a slight degree of dyspnea caused by the deformity of his thorax. His appetite was good, he had no digestive trouble, no constipation or diarrhea and no abdominal pain. He had, however, frequency of urination and moderate nocturia but no renal colic.

The patient remained in the orthopedic department until January 1930 when through the courtesy of this department he was transferred for further study to the medical ward service of Dr. Schnabel. During the first six months in the hospital his condition remained essentially unchanged. No

attempt was made to correct his deformities since the roentgenograms revealed such a degree of demineralization of bone that any corrective procedure seemed futile.

Physical examination showed extreme deformity. With the exception of his head, hands and feet, every portion of his skeletal system was distorted and misshapen (fig 3). The contraction deformities had reduced his total length to 45 inches from his original height of 70 inches. There was a pronounced bulging of the thorax and both legs just below the knees were bent sharply outward, producing a typical frog-leg appearance. He was, however, relatively well nourished and had no cough, cyanosis or anemia. Respiration was somewhat rapid and shallow because of the deformity of the chest.

The head was normal except that the percussion note over the calvarium was rather flat as compared with the more metallic quality of the normal skull. There was a swelling of the right maxilla the size of a small olive about half an inch anterior to the angle of the jaw.

The ears and nose were normal.

Ophthalmoscopic examination of the eye showed normal retinas, disks and blood vessels.

Examination of the mouth showed the hard palate to be unusually low and flat. The teeth were in fair condition but somewhat loose, and there was a moderate amount of pyorrhea.

There was unusual shortness of the neck because of the deformity of the cervical spine. No rigidity or impairment of motion was noted. On the left side anteriorly there was a fullness the proper significance of which could not be fully evaluated because of the general distortion of structures in this region. Just anterior to the sternocleidomastoid muscles and immediately above the sternoclavicular articulation there was

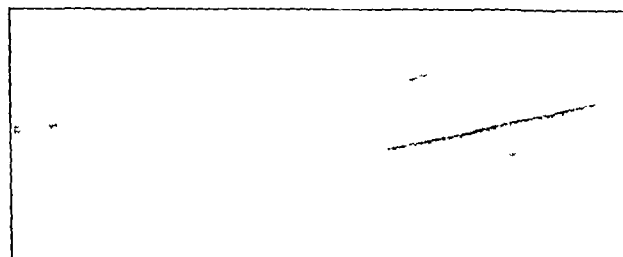


Fig 2—Left elbow showing beginning bone changes. Biopsy taken from the indented area March 25 1927 was diagnosed as giant cell tumor.

a freely movable hard mass, about 15 mm in diameter. This was at first overlooked and was noticed only a short time before the operation.

The most prominent deformity of the thorax was due to the extreme bulging of the sternum at the angle of Louis. The lower portion of the sternum flanked by the costal margins formed a flat triangle that sloped toward the abdomen at an angle of 45 degrees. The flaring of the costal margin was more prominent on the left, thus increasing the distortion and asymmetry of the chest. The circumference of the thorax at the level of the nipples was 39 inches and the maximum expansion was less than 1 inch. There was a striking lack of fixation and stability of the thoracic cage allowing a rotation of several degrees.

There was a marked kyphosis at the level of the mid-dorsal spine.

Because of the deformity of the chest no satisfactory examination of the heart and lungs was possible but grossly no signs of pathologic changes could be found. There was no arrhythmia but a moderate tachycardia. Blood pressure was 110 systolic and 90 diastolic on the right arm, 130 systolic and 105 diastolic on the left arm. The peripheral arteries were somewhat sclerosed.

As a result of posture, there was a moderate protuberance of the abdomen especially below the umbilicus. The prominent striae were indicative of the marked decrease in the size of the abdomen. The liver could be felt below the costal margin but probably was not enlarged. The bony pelvis was deformed and there was a pronounced irregularity of the iliac crests.

The left arm showed a marked bowing of the humerus, a swelling of the head of the radius and a thickening of the

wrist. The hand, which was relatively normal, was bent toward the ulnar side. There was a clubbing of the fingers of both hands. The arm could be raised to an angle of 45 degrees, motion in the elbow joint was nearly normal, pronation was about one-third complete, and the motion in the wrist was little impaired. Since the position of the arm was good and since the patient could bring the left hand to his face, this extremity was of the utmost usefulness and importance.

In the right arm the humerus was markedly deformed and there was a swelling at its lower end. The upper end of the ulna was also thickened and the radius was very irregular. The

TABLE 1—Results of Treatment

Date	Serum		Calcium Salts Orally Gm	Vitamin D Drop	Comment
	Calcium Chloride M% %	Phosphorus M% %			
1927	1.4	2.1			St. Episcopal Hospital
7/1/27	1.1	2.7			St. Philadelphia General Hospital
1/9/28	1.8	2.7			Daily calcium intake 0.76 Gm
1/4/28	14.0	3.1			Daily calcium intake 0.76 Gm
2/1/28	11.7	4.2		30	24 hours after operation
2/1/28	1.0	2.0			48 hours after operation
2/1/28	1.1	2.0			7 days after operation
2/1/28	1.8	3.1			Daily calcium intake 0.76 Gm
4/29/28	14.4	3.1			After superficial roentgen therapy
6/1/28	1.1	2.0			24 hours after second operation
6/1/28	8.1	2.0		40	48 hours after second operation slight tingling sensation and restlessness
6/8/28	3.0	1.1	Calcium lactate 6	40	Numbness tingling sensation somewhat more marked
6/9/28	5.8	2.7	Calcium lactate 6	50	Marked restlessness and in omnia more severe sensations of tingling positive Chrostak and iron eau signs mild spasm of glottis
6/10/28	5.8	2.8	Calcium gluconate 10	50	Signs of tetany unchanged marked improvement after 1 Gm. of calcium chloride intravenously
6/17/28	6.0	4.1	Calcium lactate 9	60	Somewhat improved sudden attack of dyspnea 1 Gm. of calcium chloride intravenously
6/19/28	5.7	4.1	Calcium chloride 3 calcium lactate 2	70	Marked improvement all signs of tetany have disappeared
6/24/28	8.3	4.4	Calcium chloride 1		
7/7/28	8.9	4.2			

arm could be raised only a few degrees, the elbow was fixed, the power of pronation was lost and the motion of the wrist was very limited.

The right leg showed a marked shortening and bowing of the femur so that the total length of the thigh was only 12 inches. There was furthermore a twisting of the femur, so that the knee was situated on the outer lateral side. About 4 inches below the knee the leg was bent sharply forward and outward. Motion in the hip joint was little impaired, but motion in the knee and ankle was nearly absent. The foot was relatively normal.

In the left leg the femur was distorted, thickened, bowed and shortened, the total length of the thigh being 13 inches. Just below the knee the leg was bent outward and backward at an angle of 90 degrees. The motion of the hip was good, while that of the knee was somewhat impaired. The foot was fairly normal.

The skin was normal.

An examination of the neuromuscular system revealed no marked muscular atrophy. Reflexes were hard to elicit, but no prominent neurologic signs indicative of a neurologic condition were observed.

The daily volume of urine was about 2000 cc. the specific gravity was fixed, the variation in the Mosenthal test being between 1.009 and 1.012. In reaction the urine was acid and

showed a trace of albumin, but no casts, sugar nor Bence Jones albumin were found

There was a persistent leukocytosis ranging between 16,000 and 18,000, of which 70 per cent were polymorphonuclears. No abnormal blood cells were observed. The red cell count was 4,250,000, hemoglobin, 13.6 Gm per hundred cubic centimeters. The bleeding and clotting time were two and four minutes, respectively. The blood Wassermann reaction was negative.

Chemical examination of the blood showed sugar, 87-118, urea nitrogen, 12-21, nonprotein nitrogen, 42, uric acid, 5, cholesterol, 130, and sodium chloride 488, expressed in milligrams per hundred cubic centimeters. The carbon dioxide capacity was 50 per cent by volume. Blood calcium was consistently high before operation (table 1). Plasma phosphatase (10) was increased from four to five fold. Calcium balance studies indicated an increased positive balance after the second operation (table 2).

It was not possible to determine the basal metabolic rate because of the difficulty of computing the true surface area

TABLE 2—Calcium and Phosphorus Balance

Date 1930	Before Operation			
	Calcium		Phosphorus	
	Urine Gm	Feces Gm	Urine Gm	Feces Gm
January 2,	0.38,		0.700	
26	0.424		0.666	
27	0.208		0.695	
28	0.229		0.426	
29	0.317		0.585	
5 days	1.563	1.856	3.072	1.560
Total excretion	3.40		4.63	
Total intake	3.58		6.00	
Balance	+0.18		+1.37	

Date	After Operation of Feb. 28 1930			
	Calcium		Phosphorus	
	Urine Gm	Feces Gm	Urine Gm	Feces Gm
March 17	0.370		0.459	
18	0.391		0.384	
19	0.481		0.470	
20	0.357		0.395	
21	0.157		0.291	
5 days	1.762	0.689	1.997	0.730
Total excretion	2.45		2.79	
Total intake	3.58		6.00	
Balance	+1.13		+3.21	

Date	After Operation of June 5 1930			
	Calcium		Phosphorus	
	Urine Gm	Feces Gm	Urine Gm	Feces Gm
June 18	0.02		0.212	
19	0.025		0.215	
20	0.020		0.115	
21	0.014		0.150	
22	0.025		0.250	
5 days	0.113	0.600	1.072	2.395
Total excretion	0.50		3.43	
Total intake	10.73		6.00	
Balance	+4.93		+2.57	

The vital capacity was 1180 cc. The phenolsulphonphthalein output in two hours was 15 per cent. The electrocardiogram was normal except for a slight left axis deviation.

The roentgenographic report of July 2, 1929, by Dr. E. Burvill-Holmes stated that there was a marked decalcification of all the bones of the body with innumerable fractures. Both femurs were broken in several places and almost completely demineralized. The ribs, tibiae and metacarpals showed numerous fractures. The bones generally showed a more or less cystic appearance and in some areas showed definite evidence of giant cell tumors. There was a well marked giant cell tumor occupying the head and distal fourth of the left radius (fig. 4). The upper portion of the ulna also showed a giant cell tumor. Growths were evident also in the proximal

third of the ulna and more so in the proximal half of the shaft of the radius. Another large tumor growth above the condyle of the right humerus was noted. Over the site of the left kidney there were three discrete dense circumscribed shadows, approximately 12 mm in diameter, which might possibly be areas of calcification within this organ. The diagnosis was fibrosing osteitis in conjunction with giant cell tumors. The roentgenogram taken Feb. 5, 1930, showed further decalcification (fig. 5).

The diagnosis of hyperparathyroidism seemed so obvious that an exploratory operation seemed definitely indicated. Furthermore, Dr. E. L. Eliason, who was called in consultation, noted a fulness on the left side of the neck that was suggestive of a tumor. Three weeks prior to the operation the patient was given thirty drops of viosterol⁵ daily as a preoperative preparation to prevent a too rapid fall of serum calcium after the removal of a possible parathyroid tumor.

The first operation was performed by Dr. Eliason, Feb. 28, 1930. Owing to the extreme shortness and deformity of the neck, it was difficult to get adequate exposure. This was further complicated by the fact that the operation had to be done under local anesthesia, since the low vital capacity made it inadvisable to use general anesthesia. An oblique incision was made over the fulness on the left side of the neck, and the left lobe of the thyroid was exposed. On exploring its under surface an encapsulated mass, the size of a small olive was found. An attempt was made to remove the mass with



Fig. 3—The patient at the age of 26 a few days before the removal of a hyperplastic parathyroid tumor.

the capsule intact but unfortunately the capsule ruptured and hemorrhage resulted. Only the main central portion of the mass was enucleated and removed while the capsule which probably contained hyperplastic parathyroid tissue, was sutured together to stop bleeding. The wound healed rapidly by first intention.

The pathologic report on the tumor by Dr. W. H. Blick was to the effect that it was an irregular rounded mass 1.7 by 1.5 by 1.1 cm, which appeared to have been shelled out of a capsule. The surface was grayish and was pitted. On section a mottled grayish cut surface was seen which showed fine yellowish dots and exuded blood at numerous points.

Microscopic examination of a section through the mass at the level of the greatest diameter showed a uniform structure characteristic of the parathyroid and made up of anastomosing solid cords of epithelial cells arranged in more or less palisade fashion. The tissue was very cellular and showed scant supporting connective tissue stroma. The cells were proliferating actively and the stroma was extremely vascular even hemorrhagic in places so that the whole picture was one of marked hyperactivity of the gland. There was no evidence of a malignant condition. The diagnosis was hyperplasia of the parathyroid.

Since the patient showed few symptoms before operation no striking clinical result could be expected. His serum calcium

⁵ Supplied through the courtesy of Mead Johnson & Co., Inc.

dropped immediately from 147 mg two days before operation, to 13 mg twenty-four hours following the removal of the tumor, and in one week fell to 11.5 mg. Subsequently, the calcium again began to rise slowly. Since this was considered to be due to residual hyperplastic parathyroid tissue, superficial roentgen therapy was tried. The results were unsatisfactory. The serum calcium steadily increased and in three months was again over 15 mg. per hundred cubic centimeters.

June 5 Dr. Ellison performed a second operation. Somewhat inferior and deeper than the first tumor an encapsulated mass was found which in all probability was a portion of the original

studies showed that there was retention of relatively large amounts of calcium. At the present time attempts are being made to correct some of the skeletal deformities.

COMMENT

The case under discussion emphasizes the great importance of recognizing early the condition of hyperparathyroidism. The patient, who at the age of 21 presented a picture of unusually perfect physical development, was reduced in the course of three years to the state of a helpless cripple and is now so deformed that any extensive corrective procedures seem futile. The history is instructive, for most of the cardinal signs and symptoms that characterize hyperparathyroidism, in both early and late stages, have been exhibited.

The earliest sign presented was a swelling of the right mandible following a traumatic injury. Whether this was a solitary bone cyst and whether it was related to his present disease cannot be answered with certainty, but it is probable that it was the earliest manifestation of the disease. The first definite symptoms were polydipsia, polyuria, a persistently milky urine, and sharp myositic and arthritic pains. It is highly probable that polyuria is often a definite symptom of early hyperparathyroidism, for the hypercalcemia, like the hyperglycemia of diabetes, causes a disturbance of the osmotic relationships which results in a marked increase in the volume of urine. A distinctly milky appearance of the urine would exist only in those instances in which the output of calcium is excessive, as in this case. Myositic and arthritic pain has been the most common symptom and was present in most of the reported cases. In some cases, notably the one described by Hunter,⁶ there was marked bone tenderness. It should be remarked that, in our patient, pain was pronounced in the early part of the disease and now is practically absent. Nausea and vomiting also were early symptoms, which later disappeared entirely. While hypotonia and muscular weakness have been pronounced in several of the cases, in this patient the muscles are surprisingly well preserved and one gets the impression that much of the deformity of the

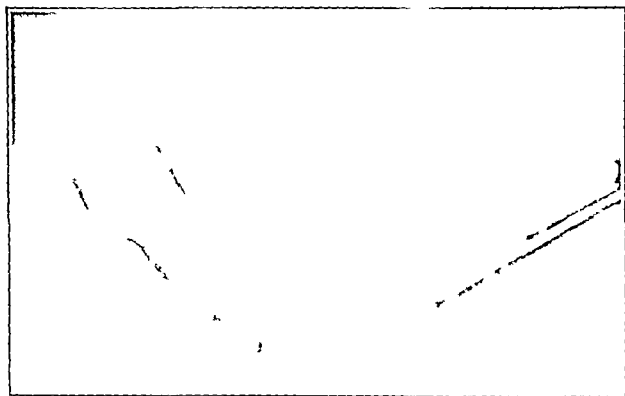


Fig. 4—Appearance of left elbow July 2, 1929, twenty-seven months later than roentgenogram shown in figure 2. A large giant cell tumor has formed at the level of the radius.

tumor. It was not possible to remove the mass intact. The main portion was enucleated and the remaining tissue was carefully removed by means of a curet.

Pathologic examination disclosed that the specimen consisted of several fragments of light yellowish tissue, the largest of which was partially encapsulated and measured 3.5 by 2 by 1.5 cm. Microscopically the picture was essentially the same as that seen in the previous section except that the cells showed even greater hyperactivity. The increased stroma of the gland and the irregularity of the size of the cells suggested the possibility of early malignant changes.

Following the second operation, a rapid drop of serum calcium occurred. Two days previous to the operation the serum calcium was 15.3 mg. per hundred cubic centimeters, and twenty-four hours after the removal of the tumor, it decreased to 8.9 mg., and in forty-eight hours, to 6.5 mg. On the third day, the lowest value, 5.5 mg., was obtained. In spite of this low calcium concentration, the patient had no symptoms of tetany, except a slight tingling sensation in his extremities, which he described as a 'feeling of electricity'. He noticed this feeling for a short time on the second evening after operation, and it recurred the following day. On the fourth day signs of tetany appeared. The tingling sensation became more marked, positive Chvostek and Trousseau signs were observed, and there was a mild spasm of the glottis. Intravenous administration of 10 cc. of 10 per cent calcium gluconate relieved the acute symptoms. The following day the signs of tetany returned with increased intensity. One gram of calcium chloride given intravenously, gave prompt relief, but the positive Chvostek sign was not abolished and in the course of a day the tingling sensation and feeling of numbness recurred. On the seventh day he was again given intravenous calcium chloride. On the tenth day he was markedly improved and on the thirteenth day was entirely free from symptoms of tetany.

As soon as the patient developed the first signs of tetany, the oral administration of calcium was begun. Neither calcium gluconate nor calcium lactate appeared as effective as calcium chloride. Viosterol was started one day before the operation and given in large doses (from 30 to 75 drops a day), until the serum calcium was again over 8 mg. After this only five drops a day were given. No parathyroid extract was administered.

Roentgenograms taken one month after the second operation showed increased density of the bones (fig. 7), and metabolic

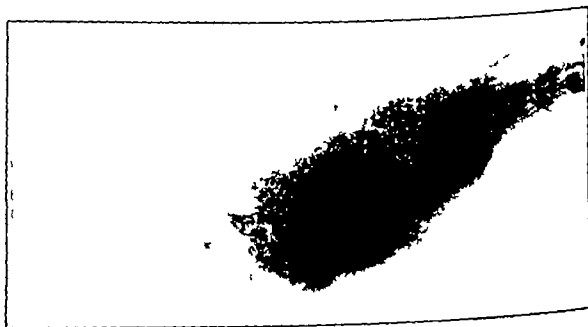


Fig. 5—Appearance of left elbow Feb. 5, 1930, further decalcification with almost complete disappearance of the head of the radius.

extremities is due to a relative disproportion between the yielding demineralized bones and the fairly strong contractile power of the muscles.

Renal colic, which has been reported in these cases was not observed. It is apt to occur, however, because of calcium stones forming in the pelvis of the kidney as a result of the high concentration of calcium in the urine. Constipation also has been mentioned but probably is an unimportant symptom.

6 Hunter, Donald. Hyperparathyroidism. Hyperfunction of Parathyroid Tumor in a Case of Generalized Osteitis Fibrosa. *Proc. Roy. Soc. Med. Sect. Med.* 23: 227 (Dec.) 1929.

Disturbance of gait and orthopedic deformities, such as genu varum,⁷ genu valgum⁸ and abnormal mobility of joints,⁴ have also been prominent early symptoms.

The symptoms encountered in the far advanced stage are few and surprisingly mild, if this case can be considered representative. The renal insufficiency, as manifested by polyuria and nocturia, and substantiated by urine analyses and kidney function tests, is a serious sequel of the continuous hypercalcemia. Since Hueper⁹ has demonstrated that calcification of viscera results after continued administration of parathyroid extract, and since in one of the patients reported by Barr and Bulger³ metastatic calcification of the kidneys was found, it seems logical to conclude that the kidney deficiency is at least in part due to calcification of parenchymatous renal tissue. This is further substantiated by the fact that in our patient the roentgenograms show calcified nodules in the region of the right kidney. The roentgenograms also show considerable calcification of the peripheral arteries.

The most characteristic laboratory observation in hyperparathyroidism is a persistent hypercalcemia. The calcium values, however, are not constant but are influenced by a number of factors, such as the intensity of the disease, the amount of calcium in the diet, the vitamin D intake, and possibly ultraviolet irradiation. The highest value for serum calcium thus far reported is 23.6 mg per hundred cubic centimeters,¹⁰ but usually in this disease values range between 13 and 17 mg. The serum calcium in the case under discussion varies from 14 to 15.8 mg per hundred cubic centimeters. The lowest value, 14 mg, was obtained when the calcium intake was restricted to 0.74 Gm in twenty-four hours, but on the same diet with the addition of 30 drops of viosterol daily for two weeks the serum calcium was 14.7 mg. Of fundamental importance in hyperparathyroidism is the excessive excretion of calcium, causing a negative calcium balance. In this case, peculiarly, there was no demonstrable loss of calcium when the patient was on a relatively low but theoretically adequate intake of calcium. The slight positive balance which was found does not exceed the possible limit of error, which might suggest that the available supply of calcium had reached such a degree of exhaustion that an equilibrium existed between the intake and the output of calcium.

After the removal of the parathyroid tumor a definite positive calcium balance was established with a marked decrease in the excretion of calcium in the urine. The phosphorus, like the calcium, varied between rather wide limits, but in general the values were somewhat below normal and roughly varied inversely with the calcium values.

The high concentration of plasma phosphatase in osteitis fibrosa is of interest because it may have diagnostic importance. This is an enzyme capable of splitting certain organic phosphates, such as hexosephosphate and glycerophosphate.

Recently Kray¹¹ has reported an increased concentration of phosphatase in plasma in various bone diseases especially in osteitis deformans but also in a case of osteitis fibrosa. The phosphatase value found

in our case was more than four times the normal value.

From the diagnostic point of view the roentgenogram is of utmost importance. Probably most of the cases will be called to the attention of a physician only after a pathologic fracture has occurred or after the patient has noticed swellings over one or several bones. When a roentgenogram is taken, a generalized bone involvement may be discovered. In our case it is fortunate that roentgenographic plates are available, both of the early and of the advanced stage. In the roentgenograms taken three years ago, cysts and swellings diagnosed as giant cell tumors were found and the general picture was that of osteitis fibrosa cystica. The swellings on biopsy further showed the histologic characteristics of a typical giant cell tumor. The benign character of these tumors is vouched for by the long duration of the disease. In the advanced stage of the disease the bones showed such an unusual degree of decalcification that it was difficult to get satisfactory roentgenograms.

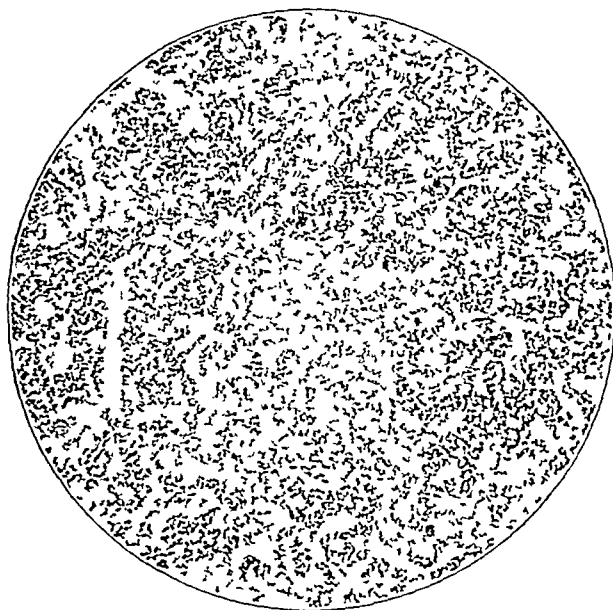


Fig. 6.—Section of the parathyroid tumor showing its compact cellular and highly vascular nature.

The bone condition found in generalized osteitis fibrosa cystica should not be confused with the localized form of fibrosa cystica, which may be a distinct clinical entity as pointed out by Mandl.¹²

With the recognition of the importance of parathyroid dysfunction in clinical medicine further knowledge concerning the function of this gland is urgently needed. In spite of the tremendous volume of literature on the physiology of the parathyroids, it appears that the only definitely known function of these glands is to maintain the normal calcium level of the blood. The active hormone of the parathyroid increases serum calcium apparently by the liberation of this element from the bone deposits. There seems to be no evidence to indicate that the hormone can aid in the absorption of calcium from the gastrointestinal tract or render it available for the body; neither is there conclusive evidence that the parathyroid is responsible for the deposition of calcium in bone. Since the parathyroid

7 Boyd I. D., Milgram I. E. and Stearn, Geneva: Clinical Hyperparathyroidism, J. A. M. A. 93 (84 Aug. 1) 1929.

8 Compere L. I., Bone Change in Hyperparathyroidism, Surg. Gynec. Obst. 50, 73 (May) 1930.

9 Hueper, Wilhelm: Effect of Repeated Injections of Parathyroid Extract on Calcification of Ovarian Tissues, Arch. Path. 7, 103 (June) 1927.

10 Snapper I., Czerny von een by hieldklier en skeletwaaingen, Nederl. Tijdschr. v. Geneesk. 41, 4755 (Oct. 1) 1926.

11 Kray H. D., Plasma Phosphatase in Osteitis Deformans and in Other Diseases of Bone, Brit. J. Exper. Path. 10, 5 (Apr.) 1929.

12 Mandl F., Klin. Les und Experimentelles zur Frage der Lokalisation und generalisierten Osteitis fibrosa cystica, Arch. f. Klin. Chir. 147, 1 1926.

seems to be responsible for maintaining the normal calcium level of the blood, it is to be expected that hyperplasia of the parathyroids is apt to occur when there is a depletion of the blood calcium, such as might be brought about by a prolonged calcium-poor diet by pregnancy or by a deficiency of vitamin D in the diet. Both Marine¹³ and Luce¹⁴ have observed this hyperplasia in animals after feeding a diet low in calcium. Probably the parathyroid is not affected by pregnancy and lactation if the mother receives a diet high enough in calcium, phosphorus and vitamin D to supply the needs of the fetus.

Although vitamin D or viosterol, like parathyroid extract, raises serum calcium its action is probably independent of the parathyroid and perhaps even antagonistic to it. Recently Jones, Rapoport and Hodes,¹⁵ and Demole and Christ¹⁶ found that the serum calcium in thyroparathyroidectomized dogs can be raised not only to normal levels but also to values 50 per cent

to assume that vitamin D, by causing absorption of calcium from the intestines, indirectly assists the parathyroid in maintaining the serum calcium level. Should the animal be entirely deprived of the antirachitic vitamin, the whole burden of maintaining the calcium level would fall on the parathyroids, in consequence of which hyperplasia of these glands might be expected. Nonidez and Goodale,¹⁸ and Higgins and Sheard¹⁹ have obtained experimental results that lend support to this conclusion. They found that, when chicks were kept from direct sunlight and fed a diet poor in the antirachitic vitamin, enlargements of the parathyroids resulted. If it is assumed that the action of vitamin D is antagonistic to that of the parathyroid, one can explain the observation that a high vitamin D intake or ultraviolet irradiation produces a symptomatic improvement in osteitis fibrosa. Mandl²⁰ noted that his patient improved in summer, and Wilder²⁰ commented on the favorable action of vitamin D on his patient. In this case even a positive calcium balance was established.

The therapeutic action of vitamin D in hyperparathyroidism is only temporary and cannot cure the disease. It has possibly, however, another use. Barr and Bulger,²¹ as well as others have shown that the most serious danger in removing a hyperplastic parathyroid is the sudden drop in serum calcium, which may cause a severe and even fatal tetany. One patient reported by Beck²² died of tetany in twenty days after the removal of a parathyroid tumor, and only heroic efforts saved the patient of Barr and Bulger. Since Jones, Brougher,²³ Wade²⁴ and Greenwald and Gross²⁵ have found that tetany in thyroparathyroidectomized dogs can be prevented or at least minimized and delayed by the preoperative administration of cod liver oil or viosterol, it seems logical to treat hyperparathyroid cases in a similar way preoperatively. This was done in our patient, but as the tumor was only partially removed at the first operation it is difficult to decide to what extent the slow drop in serum calcium was influenced by viosterol. For the second operation the administration of viosterol unfortunately was begun only one day preoperatively. It seems rather definite that viosterol exerted an unquestionably beneficial effect. Although the serum calcium dropped very rapidly and in three days reached the value of 5.5 mg no signs of tetany, except a slight tingling sensation, were manifested. Although the signs and symptoms of tetany became more marked from the fourth to the ninth day after operation, they were not nearly as severe as one might have expected from the low concentration of serum calcium. Recovery was amazingly rapid, and in less than two weeks after operation no signs of tetany remained, even though the serum calcium was still 5.7 mg. A few days later, however, the calcium began to approach normal values. Other inves-



Fig 7—Appearance of left elbow July 2 1930 one month after the second operation there is a definite increase in the density of the bones the proximal end of the radius is entirely absorbed

above normal by viosterol. Jones¹⁷ has further found that, if an animal is deprived of calcium in its diet, viosterol failed to raise serum calcium. These results suggest that the increase of calcium in the blood after the administration of vitamin D is due to a greater and more complete absorption of ingested calcium. Since it is well known that vitamin D brings about calcification in bone, as in the curing of rickets, one is led to conclude that the action of vitamin D is antagonistic to parathyroid extract, which liberates calcium from bone, although both raise serum calcium. In fact it is logical

- 18 Nonidez, J. F. and Goodale, H. D. Histological Studies on the Endocrines of Chickens Deprived of Ultraviolet Light. I. Parathyroids. *Am J Anat* **38** 319 (Jan.) 1926-1927.
- 19 Higgins, G. M. and Sheard, C. The Effects of Selective Solar Irradiation on the Parathyroid Glands of Chicks. *Am J Physiol* **85** 299 (June) 1928.
- 20 Wilder, R. M. Hyperparathyroidism. Tumor of the Parathyroid Gland Associated with Osteitis Fibrosa. *Endocrinology* **13** 231 (May) 1929.
- 21 Beck, A. Aussprache. *Arch f klin Chir* **103** 125 1928.
- 22 Jones, J. H. The Effect of the Administration of Cod Liver Oil upon Thyroparathyroidectomized Dogs. *J Biol Chem* **70** 647 (Nov.) 1926.
- 23 Brougher, J. C. The Treatment of Parathyroidectomized Dogs with Cod Liver Oil. *Am J Physiol* **84** 583 (April) 1928.
- 24 Wade, P. A. Clinical and Experimental Studies on Calcium and Cholesterol in Relation to the Thyroid Parathyroid Apparatus. *Am J Physiol* **177** 790 (June) 1929.
- 25 Greenwald, Isador and Gross, Joseph. The Prevention of the Tetany of Parathyroidectomized Dogs. *J Biol Chem* **82** 505 (May) 1929.

- 13 Marine, David. Parathyroid Hypertrophy and Hyperplasia in Fowls. *Proc Soc Exper Biol & Med* **11** 117 (April) 1913.
- 14 Luce, E. M. The Size of the Parathyroids of Rats and the Effect of a Diet Deficient in Calcium. *J Path & Bact* **26** 200 1923.
- 15 Jones, J. H., Rapoport, M. and Hodes, H. L. The Effect of Irradiated Ergosterol on Thyroparathyroidectomized Dogs. *J Biol Chem* **86** 267 (March) 1930.
- 16 Demole, V. and Christ, A. Wirkung des D. Vitamins am Neben schilddrüsenextirpierten Hund. *Arch f exper Path u Pharmacol* **146** 361 1929.
- 17 Jones, J. H., Rapoport, M. and Hodes, H. L. The Effect of Irradiated Ergosterol on the Absorption of Calcium from the Gastro-Intestinal Tract. *Proceedings of the Physiological Society of Philadelphia*. *Am J Physiol* **1-9** 729 (May) 1930.

tigators, Brougher,² Gleich and Goodman,^{2*} and Stein,^{2*} also have found vitamin D effective in relieving parathyroid tetany in human beings. Although vitamin D can raise serum calcium, its action in preventing tetany does not seem to depend primarily on raising the concentration of calcium. Vitamin D, furthermore, probably aided recalcification, for in our case a definite increase in the density of the bones was noted in the roentgenograms one month after the second operation, and metabolic studies showed a pronounced positive calcium balance.

SUMMARY

In an extremely advanced case of hyperparathyroidism (osteitis fibrosa cystica), a parathyroid tumor was found, and after its removal marked improvement was noted.

The importance of early diagnosis is emphasized and a review made of the most common early symptoms and laboratory observations.

The relation of vitamin D to the parathyroid is discussed. The use of viosterol is advocated for preventing or minimizing parathyroid tetany, and also for hastening the recalcification of bone after the removal of a parathyroid tumor.

TREATMENT OF GANGRENE DUE TO THROMBO-ANGIITIS OBLITERANS*

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NEW YORK

The past decade has witnessed radical changes in the treatment of thrombo-angitis obliterans.¹ Former teachings concerning this disease gave rise to the impression that the ultimate outcome in almost every case of thrombo-angitis obliterans was amputation of one or more extremities because of the inevitable occurrence of gangrene. This erroneous idea has been so impressed on physicians that patients, even in the early stages of the disease are often looked on as hopeless, and doomed to a future minus legs and arms. I have known of instances in which immediate amputation of both legs was advised because of the presence of incipient thrombo-angitis obliterans, without ulceration or gangrene. A still larger number of cases of thrombo-angitis obliterans are submitted to high amputation because of the presence of a small area of gangrene limited to one toe. In many textbooks the disease is described as a progressive series of amputations, and, as a result of these teachings the family physician is often misled into believing that once the diagnosis of thrombo-angitis obliterans is made the surgeon should be consulted for immediate amputation of the affected limb. Since the advent of modern methods of diagnosis and treatment of this malady it has become necessary to revise the older concepts of this disease and to adopt a more optimistic attitude as far as its prognosis is concerned.

Before proceeding to a detailed description of the methods I have used in treating this disease I believe it well to describe one case which because of its

severity and unusual outcome, will illustrate the points I wish to emphasize.

REPORT OF CASE

A Russian Jew, aged 32, developed gangrene of the left foot as a result of thrombo-angitis obliterans. At the time of my first examination, the toes of the left foot were completely gangrenous and there was an area of superficial gangrene extending back almost as far as the ankle and the heel (fig 1 A). Oscillometric examination² revealed no pulsation at the left ankle. The gangrene was of the "wet type", that is, the toes and adjacent tissues were macerated and there was considerable infection in the surrounding portion of the foot. There was also marked edema of the lower part of the leg and foot so that the circumference of the ankle was increased to about twice its usual size. This edema was due to the dependent position in which the patient had been maintaining the foot constantly prior to my intervention. The patient's general condition was very bad because of peculiar starvation diets that had been previously prescribed for him under the belief that the disease might be a metabolic disturbance. In view of the extent of the gangrene and of the patient's poor general condition and also because of the severe pain immediate high amputation had been advised. The patient, however, was insistent that he would rather die than undergo the loss of his leg. It was thereupon decided that if there was no increase in size of the gangrenous area after a week's observation conservative measures would be instituted with the hope of producing separation of the gangrenous parts and subsequent healing of the wound. That this attempt was successful is apparent after studying a recent photograph (fig 1 B) taken ten months after the institution of conservative therapy.

CLINICAL CONCEPT OF GANGRENE

In order to interpret properly the clinical picture of a gangrenous process as it is encountered in thrombo-angitis obliterans, one must correlate what one sees externally, with the underlying pathologic changes that are taking place. It must first be realized that not every

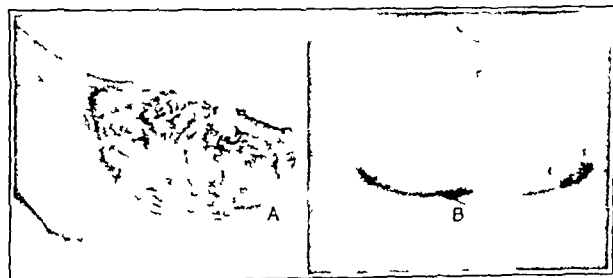


Fig. 1.—Extensive gangrenous ulcer. A, after spontaneous amputation of all toes; note exposed head of first metatarsal. B, ten months later showing foot completely healed and covered with epithelium; spontaneous amputation of all toes without surgical intervention.

case of thrombo-angitis obliterans terminates in gangrene. As a matter of fact the percentage of patients with this disease who ultimately develop gangrene is surprisingly small. I have had under observation for the past seven years a patient with occlusion of the main arteries of both legs extending as high as the groin. This patient has not yet developed gangrene. In order to account for this it must be recalled that one of the fortunate peculiarities of this disease is the formation of an extensive collateral circulation coincident with the occlusion of the main arteries. This has been repeatedly demonstrated in roentgenograms of amputated legs the arteries of which have been injected with radiopaque substances. From this it can be deduced

26 Brougher, J. C. Viosterol (Irradiated Ergosterol) in the Treatment of Parathyroid Tetany. *J. A. M. A.* 94: 471 (Feb. 15) 1930.

27 Gleich, M., and Goodman, S. Irradiated Ergosterol in the Treatment of Tetany. *New York State J. Med.* 28: 1398 (Dec. 1) 1928.

28 Stern, A. Therapie der parathyreoideen Tetanie mit Viosterol. *Deut. che med. Wchn. chr.* 54: 1294 (Aug. 1) 1928.

*From the German Polyclinic of the City of New York.

1 Samuel, S. S. Newer Aspects of Thrombo-Angitis Obliterans. *Long Island M. J.* 27: 3 (March) 1929.

2 Samuel, S. S. The Value of Oscillometry in the Study of the Circulatory Disturbances of the Extremities. *J. A. M. A.* 58: 156 (June 4) 1927. Sillert, Samuel, and Samuel, S. S. Thrombo-Angitis Obliterans (Buerger). III. Prognostic Value of Oscillometry. *J. A. M. A.* 90: 1 (March 1) 1928.

that, as long as the balance between arterial occlusion and formation of collateral circulation is maintained, gangrene will not develop. If, however the balance is disturbed by the sudden occlusion of a large artery or if the reserve collateral circulation is depleted by the extensive use of nicotine or by other agents, it is evident that gangrene will ensue. The most common immediate cause of the development of gangrene is the depletion

logic process of occluding arterial disease is one of self-limitation. When the arterial circulation in the extremity becomes insufficient for life of the part, the severe pain characteristic of dying tissue sets in. At the onset, the pain is felt at the point where the gangrene is about to appear. As the gangrene develops (fig 2) the pain disappears from the dead area, follows the dying tissue, and continues at its greatest severity until the line of demarcation is definitely established. It is needless to say that a lifeless toe does not cause pain. After the line of demarcation has been reached (fig 3 A), the process of self amputation of the dead tissue sets in and represents the subsiding phase of gangrene. This is well illustrated in figure 3 A, in which the formation of new epithelium is shown along the line of demarcation. The acute and excruciating pain is now replaced by milder burning pain localized to the margins of the sloughing tissues. After the gangrene has completely separated, leaving raw granulations (fig 1 A), there will still be some burning pain on the surface of the healing ulcer until epithelization is well under way. If the patient has been successfully treated over the acute demarcation phase of the gangrene there need be no hesitation in proceeding with conservative measures until epithelization has occurred. Figure 4 represents the healing stages of a gangrenous ulcer. Figure 5 shows a completely healed gangrenous toe after spontaneous amputation of the distal third.

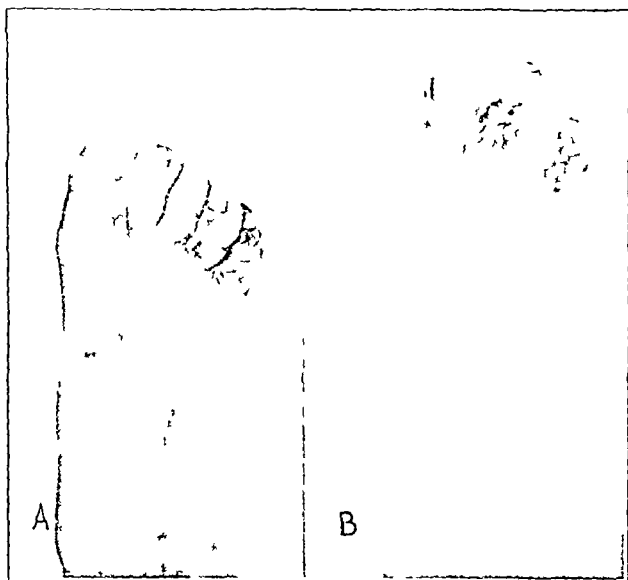


Fig 2—Gangrene. A, acute stage before line of demarcation has been established. B, a few weeks later showing disintegration of gangrenous toes, subsiding phase of gangrene.

of the reserve collateral circulation by the vasoconstricting action of nicotine. One then sees the early signs and symptoms of impending gangrene.

The earliest symptom is the gradual onset of severe pain in the big toe of the affected foot, usually under the lateral margin of the nail. This pain closely resembles that of an ingrown toenail and as a result the patient soon insists on having the nail trimmed or removed in the belief that this procedure will relieve the pain. In a large number of cases this operation has been the starting point of gangrene. Here it is well to emphasize the importance of careful examination of the arterial circulation of the foot before any operation for an ingrown toenail is performed even in an apparently normal individual. At times, even without tampering with the toenail, a small subungual ulcer begins to form, accompanied by increasingly severe pain. The patient now finds it impossible to sleep because of the intense suffering. It is at this stage of the disease that, unfortunately many unnecessary amputations are performed because of the uncontrollable intensity of the pain or because of a mistaken fear that the gangrenous process will spread indefinitely and result in the absorption of harmful toxins. It is just at this point, in my opinion, that the surgeon must exhibit the greatest conservatism and have the courage to tide the patient over until the gangrene has become demarcated. The greatest problem at this time is the relief of pain and it is here that the physician's ingenuity is severely taxed. Furthermore, one will have to contend with this pain throughout the duration of what I call the acute stage of gangrene. It will be necessary here to describe this process in further detail.

After study of a large number of cases of gangrene, one soon becomes cognizant of the fact that the patho-

TREATMENT OF GANGRENE IN ITS VARIOUS PHASES

At the earliest intimation of the onset of gangrene in a toe, it is necessary to carry out the following procedures. In the first place, smoking must be prohibited in absolute terms. This factor is so important that one may expect marked relief from the pain after the patient has stopped smoking for a few days. Furthermore, because of its vasoconstricting action, nicotine will destroy whatever collateral reserve there may be left in the affected extremity and thus cause an unneces-



Fig 3—Extensive gangrene of foot. A, line of demarcation established. B, six weeks later showing shrinkage and separation of gangrenous tissue, note simultaneous healing and epithelization of the proximal margins.

sary increase in the area of eventual gangrene. If an ulcer has developed beneath the edge of the nail, cleansing hot baths containing an antiseptic and deodorant, such as chloramine, should be prescribed. The baths are particularly valuable in the case of ulcers that have become secondarily infected. The practice of surgically removing the nail in the attempt to produce better drainage of the infection is unnecessary and productive of more pain and spreading of the infection.

The cleansing baths are carried out three times a day for periods of fifteen minutes. During the bath the patient is instructed to keep the foot in motion so as constantly to loosen whatever slough or detritus may be present. Following the bath it may be necessary to apply an anesthetic ointment to the exposed portions of the ulcer. This must be applied liberally and in such a fashion that no air comes into direct contact with the gangrenous areas. As the gangrene progresses, the same procedure is continued, namely, chloramine baths

tion of the vein at the site of the injection. This reaction resembles that seen in the treatment of varicose veins by the injection of concentrated salt solution. In these cases, which are rather uncommon, I have found it advisable to use a 3 per cent solution instead of a concentration of 5 per cent.

THE HEALING STAGE

After the line of demarcation has been established (fig 3 A) the acuteness of the gangrenous process may be said to have subsided. The acute inflammatory appearance of the surrounding tissues of the foot changes, and the patient's general condition begins to improve. His appetite becomes better, he is able to sleep, and he loses the feeling of hopelessness and depression which is so characteristic of the early stage of gangrene. It is essential throughout this period to continue the cleansing baths of chloramine solution, as outlined previously. Following the bath a liberal application of a simple soothing ointment should be made. The ointment should cover the gangrenous tissues thoroughly so that all air is excluded from the diseased portions of the foot. If this treatment is followed rigidly and patiently, one soon notices gradual disintegration of the dead tissues (fig 2 B) followed by spontaneous

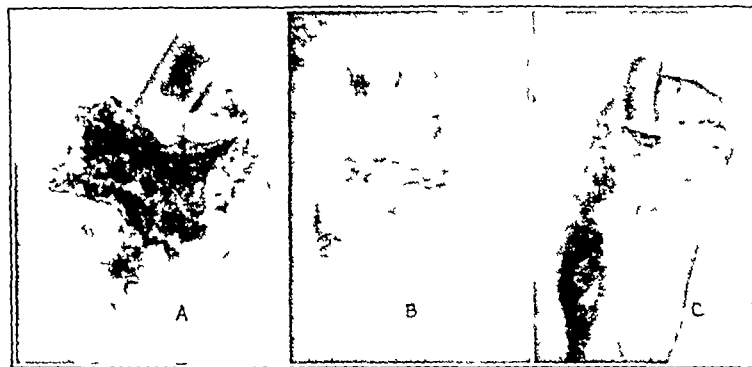


Fig 4—Usual stages in the healing of a gangrenous ulcer. A, extensive formation of new epithelium. B, complete healing of stump after spontaneous amputation of distal third of toe. C, regeneration of epithelium.

amputation of the toes or other involved parts. Careful examination of the area around the line of demarcation will show healthy granulations beginning to form beneath the disappearing slough (fig 3 B), and within a very short time regeneration of epithelium occurs (fig 4 B and C), which soon covers all exposed healthy granulations, wherever they may be. It is indeed surprising to observe in these cases how dead tissue separates itself with this conservative method. Tendons and bones are sponta-

neously removed without the use of surgical instruments (fig 1 A). I have often compared the spontaneous amputation of these parts to the falling of overripe fruit from a tree. As in the early stages, so in the healing stages it is of the utmost importance that the patient remain in bed. The enormous value of complete rest in bed throughout the entire course of gangrene will readily be appreciated when one observes how well healing takes place even in the presence of diminished blood supply. If difficulty is experienced in the healing of gangrene and gangrenous ulcers, a careful review of the various factors in the treatment must be made to ascertain wherein the fault lies. If, for instance, the patient is surreptitiously smoking, healing will be delayed. If the patient is not kept continuously in bed, healing will not occur. Hospitalization is ideal, but often because of the expense

Complete rest in bed from the onset of the gangrene until the final healing stages is essential. Attempts to heal these ulcers by ambulatory treatment are usually unsuccessful. It is necessary for healing that the affected extremity be kept horizontal at all times. The practice of allowing the patient to sit up with his foot hanging over the side of the bed in the belief that gravity will improve the arterial flow is erroneous. This dependent position soon produces an intense edema of the foot that is not conducive to resolution or healing. If one will observe such an edematous foot after twenty-four hours' rest in the horizontal position, one will see marked wrinkling of the skin of the foot wherever there has been edema. With this method of treatment of the acute stages I have rarely found it necessary to administer opiates. The duration of the acute stage may be from three to six weeks and it is during this period that the greatest number of amputations have been unnecessarily performed by surgeons of limited experience with this disease.

A very important adjunct in the treatment of gangrene in all stages is the internal administration of large quantities of fluids. This may be given in various ways. Some prefer the injection of large amounts of fluids through a duodenal tube. Others prefer the subcutaneous route. I believe the intravenous method to be the simplest and most efficient. The type of solution to be injected is a matter of individual preference. Some prefer Ringer's solution, others prefer sodium citrate or sodium chloride. I am in agreement with Silbert² that hypertonic sodium chloride solution is the simplest to prepare and to administer. The usual procedure is to inject 300 cc of 5 per cent solution of sodium chloride intravenously every other day. It will be found in rare instances that there is a tendency with the use of so concentrated a solution to produce oblitera-



Fig 5—Complete healing.

tion of the vein at the site of the injection. This reaction resembles that seen in the treatment of varicose veins by the injection of concentrated salt solution. In these cases, which are rather uncommon, I have found it advisable to use a 3 per cent solution instead of a concentration of 5 per cent.

After the line of demarcation has been established (fig 3 A) the acuteness of the gangrenous process may be said to have subsided. The acute inflammatory appearance of the surrounding tissues of the foot changes, and the patient's general condition begins to improve. His appetite becomes better, he is able to sleep, and he loses the feeling of hopelessness and depression which is so characteristic of the early stage of gangrene. It is essential throughout this period to continue the cleansing baths of chloramine solution, as outlined previously. Following the bath a liberal application of a simple soothing ointment should be made. The ointment should cover the gangrenous tissues thoroughly so that all air is excluded from the diseased portions of the foot. If this treatment is followed rigidly and patiently, one soon notices gradual disintegration of the dead tissues (fig 2 B) followed by spontaneous

amputation of the toes or other involved parts. Careful examination of the area around the line of demarcation will show healthy granulations beginning to form beneath the disappearing slough (fig 3 B), and within a very short time regeneration of epithelium occurs (fig 4 B and C), which soon covers all exposed healthy granulations, wherever they may be. It is indeed surprising to observe in these cases how dead tissue separates itself with this conservative method. Tendons and bones are sponta-

² Silbert, Samuel. The Treatment of Thrombo-Angitis Obliterans. J. A. M. A. 56: 1759 (June 4) 1926.

involved one is forced to treat the patient at his home insisting that he remain in bed at all times. Regularity of the cleansing baths is extremely important. In making up the solution for the bath one must be sure that boiled water is used. The proper selection of ointments is of importance. In the acute stages an anesthetic ointment is to be applied liberally while in the healing stages the use of a nonirritating bland ointment is advocated. In the latter stage it may be possible if the patient is able to endure moderate pain to apply only wet dressings of either chloramine solution or boric acid solution. In any event the routine of treatment should be continued without change until complete healing has been achieved (fig 5).

OTHER METHODS OF TREATMENT

As the clinical course of gangrene and gangrenous ulcers is characterized by rapid development and comparatively slow healing it seems unreasonable to expect to produce healing by agents whose action is spasmodic and temporary. I refer particularly to the use of various vasodilators such as typhoid vaccine and operative procedures on the sympathetic system. The use of typhoid vaccine in any stage of gangrene is attended with the risk of sudden occlusion of large arteries during the period of hyperpyrexia not to mention the discomfort of the high fever and severe chills often associated with nausea and vomiting. Furthermore, there appears to be slight benefit from a transitory vasodilatation in a process that will require weeks or months to improve. The same may be said of the various operations devised to produce vasodilatation by the interruption of the sympathetic pathway in the affected limb. It appears to me that the complexity and risk of the operation of severing the lumbar sympathetic fibers is far too great in proportion to the temporary benefits obtained in these cases which are characteristically chronic in nature.

As far as the Leriche operation is concerned the following quotation from Leriche's own article¹ is self explanatory.

In Buerger's disease periarterial sympathectomy has frequently been tried in the United States. This is wrong in my opinion. The operation can accomplish nothing in thrombo-angitis obliterans for in order to produce its effect it requires at least a partially intact peripheral circulatory system. At the meeting of the American Surgical Association in 1921 I warned certain members against the temptation of trying sympathectomy in these cases. Since that time I have repeatedly published the view that sympathectomy should not be performed in thrombo-angitis obliterans. Nearly all those who have attempted it have failed. Only recently Allen has published eight failures, and in the Royal Society of Medicine of London, Gish, Schesinger and others have reported failures. In these cases I have had no result from extensive periarterial resections and have done no better by dividing the lumbar communicating branches. Briefly I am more and more led to think that no sympathetic operation is of value in Buerger's disease.

INDICATIONS FOR AMPUTATION

Amputation of a leg should be performed only when the gangrene involves the entire foot including the heel. In other words, if it appears that the patient will be left with a foot that will have no functional value it is just as well to amputate below or above the knee. Such extensive gangrene is, fortunately, very rare. Operative amputation of toes or fingers is, in my opinion, usually unsatisfactory and attended with the danger of postoperative spread of the gangrenous area, not to

mention the frequent occurrence of subsequent chronic osteomyelitis.

Pain per se should never be used as an indication for amputation. With the use of properly selected anesthetic ointments, cleansing baths, the prohibition of nicotine and rest in bed the pain can nearly always be controlled. If necessary, opiates may be used until the acute stage is over.

SUMMARY

Gangrene, which often occurs during the course of thrombo-angitis obliterans, is a self-limiting process. Extreme conservatism, even in the severest forms of gangrene, is usually rewarded with an intact extremity, the value of which no one will question. Amputation of a leg should be advised only when it appears that the gangrene will destroy so much tissue that a non-functioning foot will be the ultimate outcome. Pain is no indication for amputation.

Rest in bed, cessation of smoking, cleansing baths, the application of anesthetic ointments and the intravenous administration of large amounts of fluids are the essentials in the conservative treatment of gangrene due to thrombo-angitis obliterans.

151 Last Eighty-Third Street

RENAL CARBUNCLE*

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Carbuncle of the kidney may be defined as a metastatic circumscribed, conglomerate suppurative process, usually caused by *Staphylococcus aureus*, having its origin in some superficial focus, such as a furuncle, pyonichia or carbuncle. Israel¹ first described the disease in 1901, referring to it as carbuncle because of its striking similarity to an ordinary superficial carbuncle. That the name has met with general acceptance is evident from its employment in the medical literature of the world. It is adequately descriptive of the condition although its pathogenesis differs widely from the ordinary skin carbuncle.

A review of the literature reveals only forty-two cases and reference to twenty-two others, the details of which are lacking. The few cases reported not only may denote the rarity of the disease but also may be construed as indicating the difficulty of diagnosis. It is especially interesting to note that perinephric abscess was present in fifteen of the forty-two cases. There is good reason to suspect that this complication has frequently masked the presence of a carbuncle, as it is a common practice to establish simple drainage in such cases and leave the kidney unexplored. It has been observed previously that superficial septic foci, such as boils and carbuncles, often antedate the onset of a perinephric abscess. Richardson² studied 109 collected cases of perinephric abscess, presumably of extrarenal origin and noted that furuncles preceded the abscess in fifty-five cases and carbuncles in ten. Israel,¹ Barth³ and Eisendrath⁴ after simple drainage of a

* From the Section on Urology, the Polyclinic.

¹ Read before the Section on Urology at the Eighty-first Annual Session of the American Medical Association, Detroit, June 26, 1930.

² Israel, Metastatischer Karbunkel der Niere. Deutsche med. Wochenschr. 13: 1660, 1903.

³ Richardson, E. P. Perinephric Abscess. A Review of Cases Operated on at the Massachusetts General Hospital from 1899 to 1913. Surg. Gynec. Obst. 21: 15, 1915.

⁴ Barth, Der Nierenkarbunkel. Verhandl. d. deutsch. Gesellsch. f. Chir. 44: 94, 1920.

⁵ Eisendrath, D. N. Infections of the Kidney. S. Clinics Chicago 7: 1003, 1922 (Oct.) 1920.

perinephric abscess, suspected a cortical renal infection because of continued symptoms of sepsis, and subsequent exploration of the kidney revealed a carbuncle. The wisdom of opening up a wide area in the exploration of a suspected kidney in the presence of a perinephric abscess is open to question. While such a procedure undoubtedly would reveal interesting information concerning the condition of the renal cortex, it would expose the patient to an increased hazard. Lazarus, however, in a recent report, goes so far as to advocate this practice in order that a carbuncle may not be overlooked and no harm apparently resulted in his two cases.

REPORT OF CASES

CASE 1—A boy, aged 11, complained of fever and weakness. Six months before he developed a moderate degree of pain in the right side of the chest, which was thought to be caused by pleurisy. This had been noticed intermittently since. Three weeks before he had been confined to bed for ten days with fever as high as 103 F. At the time of the examination he was very weak and could not walk without assistance. His weight was 65 pounds (29.5 Kg), and, except for slight tenderness over the region of the right kidney associated with some increased muscular rigidity, physical examination was essentially negative. Hemoglobin was 58 per cent and there was a leukocytosis of 11,000. Roentgenograms of the urinary tract and of the chest were negative. The Pirquet test was negative. Tubercle bacilli could not be demonstrated in the urine sediment but culture of the urine in brain broth disclosed hemolytic streptococci.



Fig. 1—Large soft tissue shadow in the region of the lower pole of the right kidney associated with displacement and narrowing of the upper ureter.

On cystoscopic examination the bladder appeared normal and the specimens from each kidney were free from pus and were sterile. Bilateral pyelograms revealed a normal outline on the left but on the right side there was a large soft tissue shadow in the region of the lower pole which displaced and narrowed the upper 5 cm. of the ureter (fig. 1). Exploration of the right kidney revealed moderate edema throughout the

perirenal tissue. There was a large circumscribed suppurating process in the lower pole which was incised and about 2 or 3 ounces of thick odorless pus was evacuated. Free drainage was established and the patient made a good recovery, being discharged from the hospital twenty days following the operation.

This case is of interest in that there was no definite history of a superficial lesion and that the symptoms extended over a period of six months before the diagnosis was established. It is exceptional in that the causative organism was the hemolytic streptococcus. At no time did the urine contain more than an occasional pus cell.

CASE 2—A man, aged 37, gave as his chief complaint rigors and fever. Eight weeks before he had experienced some discomfort in the right side of the abdomen associated with considerable gas but no vomiting or diarrhea. He was kept in bed with an ice bag over the abdomen



Fig. 2 (case 2)—Right pyelogram showing the marked deformity of the pelvis and distortion of the calices is not unlike that caused by a renal neoplasm.

and allowed nothing by mouth for several days. On examination of the urine his physician found pus and during the following three or four weeks he had repeated rigors, high fever and profuse sweats. There had been slight dysuria but no hematuria nor renal colic. The right renal pelvis was enlarged, following which he gradually improved temporarily. During the period of his illness he had lost 25 pounds (11.3 Kg) and physically was very weak.

On physical examination except for evidences of loss of weight the observations were essentially negative. The blood urea and phenolsulphonphthalein output were normal. The leukocyte count was 9,300. The roentgenogram of the urinary tract was negative. The urine contained about 75 pus cells per high power field. On cystoscopic examination the urine from the right kidney was found to contain 3 pus cells per field and from the left it was negative. Indigo carmine returned in good concentration in three minutes from the right and in four minutes from the left. A right pyelogram disclosed a marked deformity of the pelvis characterized by a filling defect and elongation and distortion of the calices suggestive of a right renal neoplasm (fig. 2). Three days later a left pyelogram was made in order to exclude polycystic kidney and was found normal. A diagnosis was made of right renal neoplasm of indeterminate character and exploration of the kidney advised. At operation an extensive localized suppurative process about 7 cm. in diameter was found with destruction of about 50 per cent of the kidney substance. A nephrectomy was done followed by an uneventful convalescence except for a thrombophlebitis.

This case is of especial interest in that the inflammatory process gave rise to a leukocytosis of only 9,300 and the pyelogram was so strongly suggestive of a renal neoplasm that an erroneous diagnosis was made.

CASE 3—A man, aged 51, complained of general weakness, loss of appetite and moderate fever at intervals which had lasted for three months. Several weeks before the onset of these symptoms he had developed an itching between the toes of the right foot which he had scratched. Infection followed and the part became badly swollen with pus formation which confined him to bed for five days and prevented work for a period of five weeks. He was exceptionally healthy

an abscess on his nose and a superficial skin infection of the left wrist. He had lost 22 pounds (10 Kg.)

Physical examination disclosed nothing of importance except for a slight bulging in the right renal area which was not tender. Urinalysis was negative except for an occasional erythrocyte and 6 pus cells per high power field. Roentgenograms of the urinary tract and of the chest were reported negative. The leukocyte count was 22,700 and the hemoglobin was 35 per cent. The patient was hospitalized for further observation. An irregular temperature course continued and



Fig. 3 (case 3).—Only slight deviation from the normal although the kidney was involved extensively.

three days after admission the leukocyte count was 31,900. There was an increased rigidity of the muscles anteriorly and posteriorly in the region of the right kidney. There was essentially no change in the condition of the urine. On cystoscopic examination the bladder was found to be normal and there was an occasional pus cell in the urine from each kidney. A right pyelogram was somewhat indefinite in outline because of underfilling (fig. 3). Not until four days later were there any localizing symptoms, then definite tenderness was elicited and the right kidney became palpable. A second roentgenographic examination disclosed shadows suggestive of medium in the region of the cortex of the kidney at the lower pole. The cystoscopic diagnosis was indeterminate.

Exploration of the right kidney was made the following day and the organ found to be about twice normal size with a large multilocular abscess in the lower pole and several smaller ones in the upper pole. There was about 50 per cent destruction of the renal substance. The patient experienced a very stormy convalescence, developing pneumonia with consolidation of the right upper lobe. Blood cultures on five separate days disclosed staphylococci twice and were reported negative three times. On the ninth day after operation bile was found on the wound dressings and the following day a jejunostomy was performed for postoperative duodenal fistula. The septic condition steadily progressed and the patient died on the fourteenth day following the nephrectomy.

The absence of pain and of urinary symptoms and the practically negative cystoscopic observations in the presence of so many pathologic changes involving the right kidney is of special interest and exemplifies the difficulties of diagnosis in instances of renal carbuncle. These features delayed for a considerable time surgical intervention and were probable important factors in the ultimate mortality.

CASE 4^a—A woman aged 33, gradually developed pain and tenderness in the right loin, associated with fever and urinary frequency. About six weeks before there had been a large boil on the neck, which subsided without incidence. Three weeks before she had been through a normal parturition. Catheterization was necessary the first forty-eight hours. She was discharged from the hospital at the end of the second week and had been up and about the house when the present symptoms began. There was moderate tenderness in the right renal area both posteriorly and anteriorly. The urine contained much pus and an occasional erythrocyte. The blood urea was normal and a roentgen examination of the urinary tract was negative. Cystoscopic examination disclosed a bladder

descensus of moderate degree and 150 cc of residual urine with considerable sedimented pus in the base of the bladder. There was 30 cc of retained urine in the right renal pelvis, which showed 5 pus cells per high power field. There was no retention on the left and the sediment was negative. Phenyl sulphathiazole appeared in four minutes from each side with an excretion of 10 per cent from the right side and 14 per cent from the left in fifteen minutes. Cultures disclosed *Staphylococcus aureus* and *B. coli* on the right; the left was sterile.

Diagnosis was made of small right hydronephrosis with infection, moderate cystocele with residual urine and an acute diffuse cystitis. For a period of three months there were frequent attacks of pain in the loin, rigors and high fever, which promptly subsided on the insertion of an indwelling ureteral catheter which would be left in place for from thirty-six to seventy-two hours. During these attacks the leukocyte count varied from 14,200 to 16,525. A right pyelogram disclosed merely a moderate degree of pyelectasis with no apparent distortion of the calices. As the condition was suggestive of cortical renal infection, mercurochrome 220 soluble was given intravenously on two occasions with no appreciable benefit. During the third month of the illness a blood transfusion was given because of moderate secondary anemia. Three months after the onset following a severe rigor and fever, an exploration of the kidney was decided on. The organ was slightly smaller than normal and there was moderate edema of the perirenal tissues. In the midportion of the convex border was a hemorrhagic softened area about 3 cm in diameter, which protruded slightly from the surface of the kidney. A nephrectomy was done, followed by an uneventful convalescence.

On section in the midportion of the kidney was an abscess surrounded by innumerable smaller abscesses in a localized area (fig. 4). The remainder of the medullary portion was practically normal in color and consistency. The pathologic diagnosis was carbuncle.

The unusual feature of this case was the intermittent attacks of pain in the loin, with rigors and fever which responded regularly to continuous ureteral catheter drainage. Presumably the small hydronephrosis was infected from time to time by the cortical suppurative process and the clinical symptoms can be attributed largely to the small infected hydronephrosis.

CASE 5—A woman aged 40 complained of persistent fever five weeks before an abscess had appeared on the left elbow which was incised and drained. A few days later there was an abscess over the left mastoid region which was treated similarly. Soon afterward fever appeared, which had been constant for more than a month, at times reaching as high as 106 F. Recently dull pain appeared in the right loin associated with moderate frequency of urination.

Physical examination disclosed scars of the recent abscesses. The right kidney was slightly enlarged, easily palpable and apparently enlarged at the lower pole, with considerable local tenderness. Urinalysis was negative except for numerous pus cells. The leukocyte count was 16,500. A pure culture of *Staphylococcus aureus* was obtained from the blood. The blood urea was 45 mg. The roentgen examination of the



Fig. 4 (case 4).—Sketch of sectioned kidney removed at operation. Note the distance of carbuncle from the renal pelvis and the tendency to perforate the capsule.

^a Detailed reports of cases 4 and 5 were given in the Southern Medical Journal (22: 338-345 [April] 1929).

urinary tract was negative. Cystoscopic examination disclosed a moderate degree of cystitis. The urine disclosed no pus but a culture of *Staphylococcus aureus* was obtained from the right kidney and there was no growth from the left. Indigo carmine was slightly delayed in appearance from the right kidney and with slightly diminished concentration as compared with the left. A right pyelogram revealed a definite narrowing and elongation of the lower calyx and was otherwise normal (fig 5 A).

A diagnosis was made of *Staphylococcus aureus* septicemia with a localized metastatic cortical infection of the right kidney, probably a carbuncle. Exploration of the kidney was considered but because of the infection in the blood stream it was decided first to give mercurochrome intravenously. Twenty cubic centimeters of a one per cent solution was given, following which there was a moderate reaction with rapid recession in temperature, which after a few days remained normal. The patient soon felt much better generally and at the end of a week was able to be up and about. The enlargement and tenderness at the lower pole of the right kidney gradually disappeared and on repeating the right pyelogram seventeen days later, there was the interesting revelation of a reversion to normal of the lower calyx (fig 5 B). No infection was present and the differential functional test (phenolsulphonphthalein) was normal, 17 per cent from the right and 12 per cent from the left in fifteen minutes. One year later she considered herself entirely well.

For obvious reasons, pathologic proof of the existence of a carbuncle is lacking in this case. The clinical diagnosis, however, seems justified in view of the recent abscesses of the skin followed by pain in the renal area, the recovery of *Staphylococcus aureus* from the urine of the infected kidney, the function of which was diminished, and a palpable enlargement and tenderness of the lower pole of the kidney, with a corresponding deformity in the pyelogram, which disappeared after intravenous chemotherapy.

ETIOLOGY

Men are more commonly affected with renal carbuncle than women. Of forty-seven cases including the five here described, fifteen occurred in women and thirty-two in men. Three instances of the disease in children, all aged 10 years, are recorded by Barth,³ Beer⁷ and Colmers.⁸ Zinn⁹ and Reschke¹⁰ each had patients aged 55, which is the most advanced age recorded. Twenty-eight patients were in the third and fourth decades. Trauma in the region of the kidney may be a factor, illustrated by the cases of Thompson,¹¹ Smirnov¹² and Kohler.¹³ Brewer¹⁴ demonstrated experimentally that trauma to the kidney prior to inoculation of bacteria usually leads to localization in that organ. The greater exposure of men to trauma may explain the higher incidence of the disease in that sex.

The primary focus is usually a superficial lesion caused by *Staphylococcus aureus*. It may have been an insignificant boil, self-treated and all but forgotten by

the patient before the onset of renal symptoms. Of forty-seven cases, furuncles are mentioned in twelve as the probable source. Carbuncles in various locations occurred in eight cases and paronychia in six. Among unusual foci may be mentioned an abscessed tooth, which was removed,¹⁵ and phlegmon of the hand.¹⁶ Smirnov¹² regards acute respiratory infection as the probable source in three of his cases. In ten cases the nature of the original focus remained obscure.

PATHOLOGY

The lesion begins in the cortex as an interstitial infection. The abscess is usually composed of a number of suppurative foci in a localized area. The lesion may become surrounded with a zone of fibroblastic tissue and give the appearance of encapsulation. It is usually limited to the cortex and tends to spread toward the capsule rather than invade the renal pelvis. Capsular perforation leads to perinephric abscess, which in some cases gives rise to the first local symptoms. The uninvolved portion of the kidney remains normal to a surprising degree. This feature, together with the

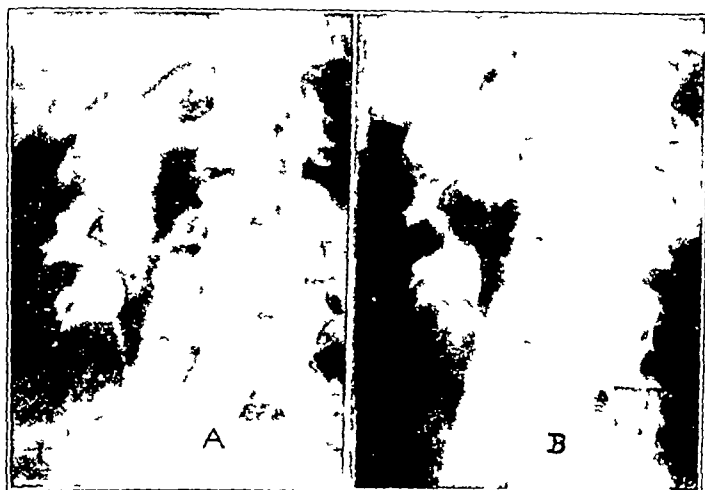


Fig 5 (case 5)—A slightly elongated and narrowed lower calyx. B pyelogram made seventeen days following intravenous chemotherapy. Note change in lower calyx.

limitation of the process to the renal cortex, explains the negative urinalysis so common in these cases. A multilocular abscess may occur and in some instances more than one carbuncle may exist in the same organ.¹ It is rarely bilateral, only three cases having been reported.¹⁵ Microscopically the purulent foci have the usual characteristics of suppurative lesions: necrotic debris and closely packed infiltrating leukocytes. *Staphylococcus aureus* is usually found in pure culture. A marked fibroblastic reaction surrounds the zone in which the blood vessels are dilated. The adjacent renal tissue shows very little change.

Considered pathologically renal carbuncle is evidently not a clear-cut, distinct entity. Neff¹⁷ believes that the renal carbuncle of many writers is the infarct, septic infarct, multiple abscess, conglomerate abscess, or

7 Beer E. Chronic Carbuncle of the Kidney and Silent Kidney Infections. Internat. J. Surg. 37: 219-222 (1924).

8 Colmers T. Carbuncle in Kidney. Ztschr. f. urol. Chir. 14: 235-243 (1924). Abstr. J. A. M. A. 82: 1157 (April 5) 1924.

9 Zinn W. Ueber die metastatische Nieren- und pararenale Nierenabszesse ausgehend von Frunkeln. Therap. u. Gegenw. 77: 14-17 (1912).

10 Reschke K. Paraneuritis und Carbuncle of Kidney. Arch. f. klin. Chir. 129: 0-27 (1924).

11 Thompson T. Case of Carbuncle of Kidney. Lancet 2 (9) 697 (Oct. 1) 1927.

12 Smirnov A. W. Noch ein Fall von Nierenkarbunkel. Supplement to Ueber Nierenkarbunkel. Ztschr. f. urol. Chir. 27: 4-47 (1922).

13 Kohler H. H. Three Cases of Carbuncle of Kidney. Zentralbl. f. Chir. 56: 1927-1931 (Aug. 3) 1909.

14 Brewer Surg. Gynec. Obst. 2: 485-1906, quoted by Sherman D. B. Hematogenous Staphylococcus Infection. Secondary to Foci in the Skin. J. A. M. A. 78: 480-483 (Feb. 15) 1922.

15 Dick B. M. Staphylococcal Suppurative Nephritis (Carbuncle of Kidney). Brit. J. Surg. 16: 106-113 (July) 1927. Beer (footnote 7).

16 Sauerbrier M. Nierenkarbunkel. Paraneuritis. Med. Welt 2: 1458-1928.

17 Neff (footnote 12). Kohler (footnote 13).

18 Krechmer H. L. Carbuncle of Kidney. J. Urol. 8: 137-143 (Aug.) 1922. Russian case cited by Neff. R. Metastatic Focal Origin of Renal Carbuncles from Urinary Infection. Ztschr. f. Urol. 21: 101-112 (1922). Sauerbrier (footnote 16).

19 Neff J. H. Encapsulated Multilocular Abscess (Carbuncle) of the Kidney. Read before the American Association of Genito-Urinary Surgeons. Jan. 2, 1935.

solitary abscess of others. Dick¹ refers to the condition as staphylococcal suppurative nephritis. There seems to be no good reason, however, for confusing it with septic infarct although it is probable that a fully developed carbuncle has had its origin in a septic embolus. It is important that it should not be confused with focal suppurative nephritis, as described by Brewer.

DIAGNOSIS

The clinical and laboratory data pointing to the renal condition may be very meager. This is well illustrated by one of the cases of Neff¹⁹ which was studied over a period of thirty-seven days under close observation in a hospital before the diagnosis was established. In a case reported by Becht²⁰ thirty-four days elapsed after admission to the hospital before a renal carbuncle was diagnosed. The chief diagnostic difficulties may be briefly stated as follows: 1. The almost complete absence of localizing symptoms is not unusual unless perinephric abscess complicates. 2. Urinalysis may be practically negative, as in thirty-three of the forty-seven cases. 3. A long period elapses between the original skin focus and symptoms referable to the renal infection. In twenty-five cases this interval averaged thirty-one days. Frequently the history of a superficial septic lesion may not be discovered until after the diagnosis is established. 4. Pyelography displays no characteristic features. In one of the cases here reported the pyelogram strongly suggested a renal neoplasm and led to an erroneous diagnosis. Individual calices may be elongated and the pelvis compressed. A large carbuncle in the lower pole may exert pressure and distort the course of the upper ureter. 5. Differential functional tests are of great value and may constitute the only clue to the presence of the renal lesion.

CLINICAL FEATURES

The onset of the symptoms of malaise, headache, fever and loss of appetite may at first suggest typhoid. Pain in the loins may be present from the first but frequently does not appear until later on in the course of the disease or simultaneously with the onset of a complicating perinephric abscess. It is usually associated with definite tenderness in the costovertebral angle. Repeated rigors are not uncommon and fever may reach a high degree. Leukocytosis of from 10,000 to 20,000 is the rule. Higher counts may indicate perinephric abscess. In cases of long continued fever with no local renal symptoms, the impaired function of one kidney, as revealed by a differential functional test, may furnish the only valuable clue.

TREATMENT

Of the forty-seven cases, primary nephrectomy was performed in twenty-one, with two deaths, incision and secondary nephrectomy in seven, with no deaths, incision and drainage only in thirteen, with two deaths, incision and secondary excision of the carbuncle in two with no deaths, enucleation of the carbuncle¹⁹ in two cases, with secondary nephrectomy in one, with one death.

In uncomplicated cases primary nephrectomy, therefore, seems the most certain and safest means of dealing with the disease. In late cases complicated by perinephric abscess, drainage followed by a secondary nephrectomy is desirable. Whenever possible the carbuncle itself as well as the perinephric abscess should be drained. In thirteen cases so treated, the incision and drainage sufficed, secondary nephrectomy not being

necessary. Neff¹⁹ has noted that a line of cleavage may be found about the carbuncle permitting enucleation of the septic mass. Following any measure less radical than nephrectomy, a persistence of high fever and other toxic symptoms usually indicates the necessity for removal of the kidney.⁴ From a study of sixteen cases, Colmers⁶ advocates nephrectomy as the treatment of choice of these patients, four died following nephrotomy, two died without the benefit of surgery and ten recovered following nephrectomy. In one of the cases here reported in which all the classic symptoms and evidences of carbuncle were present, the patient promptly recovered following intravenous chemotherapy. I have been unable to find the record of any other case that did not require surgical treatment.

SUMMARY

Carbuncle of the kidney is an unusual clinical entity, evidently often overlooked because of its frequent association with perinephric abscess, and further because of the difficulties in many instances of a definite diagnosis. The detailed observations from a study of forty-two collected cases are presented and five additional ones are reported. The chief clinical feature of the disease are as follows: There is (a) a recent history of a suppurative lesion such as a furuncle or a carbuncle. (b) From three to five weeks later, dull pain appears in the region of the affected kidney, associated with local tenderness, fever and sweats. Rigors may or may not occur. (c) The laboratory data usually includes practically a negative urinalysis, moderate leukocytosis and a positive culture of *Staphylococcus aureus* from the affected kidney, the function of which may be moderately diminished. (d) Pyelography reveals no characteristic changes and may simulate a picture of a renal neoplasm. (e) Surgical intervention is usually imperative, nephrectomy being the treatment of choice. In cases complicated by perinephric abscess preliminary drainage is desirable prior to nephrectomy.

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ABSTRACT OF DISCUSSION

DR D. K. ROSE, St. Louis: The points that I get out of this paper are that this is a definite pathologic entity, that surgically, it is blood borne, and that the diagnosis is admittedly difficult. In analyzing these cases, there is the explanation of many difficult diagnoses: that is, septic temperature for some time with indefinite physical signs and negative urinary conditions with the diagnosis suddenly becoming more clearly one of perinephric abscess. This is suggestive that the perinephric abscess is secondary to the carbuncle, and, when there is such a sequence of events, wouldn't it be advisable to explore the kidney rather than simply to drain the abscess? In the cases in which the diagnosis of perinephric abscess is easily made in its early stage wouldn't it be less advisable to explore the kidney but rather only to drain the abscess? Some of these specimens also suggest that secondary foci in the kidney occur after the formation of perinephric abscesses. Undoubtedly, however, the majority of the lesions are secondary within the capsule of the kidney.

DR HAROLD I. MORRIS, Detroit: I agree with everything Dr. Moore has said. In Detroit the dictum has been laid down by an authority in the urologic world that there is no such thing as a unilateral renal carbuncle. The point of view taken was that, in consideration of a unilateral involvement, the staphylococcus being blood borne, did not occur and that renal cortical infection was of necessity bilateral. The very fact that time is a factor in the diagnosis of renal carbuncle, I think will satisfactorily explain the delay in diagnosis when there is present perivertebral tenderness rather sudden onset with or without symptoms such as frequency and hematuria following the upper respiratory tract infection of an acute type or following the

removal of tooth or tonsil or the acute exacerbation of foci elsewhere. I think that this type of renal infection is entirely different from the renal carbuncle which has been described, and which I think is the correct interpretation that should be put on this particular condition. In my experience, a nephrectomy is seldom necessary. If time is taken, as it should be, before this diagnosis is established, these infections are walled off and, I believe, in the majority of cases, as Dr Moore's statistics show, free incision and adequate drainage is sufficient. Of course, if the kidney cortex is destroyed, nephrectomy is necessary.

DR CHARLES P. MATHÉ, San Francisco. I am glad to hear Dr Moore describe carbuncle of the kidney as a definite clinical entity. In 1925, I reviewed the literature and added the report of a case occurring in a young school teacher in which the carbuncle was secondary to two boils of the neck and in which staphylococci were found in the boils in the blood stream and in the carbuncle itself. One should not confuse the urogenic type of kidney abscess, which is usually associated with stasis and chronic pyelonephritis, with renal carbuncle. The latter is a staphylococcal infection in the cortex of the kidney secondary to lesions in the skin, such as boils, furuncles, paronychia and carbuncles. The organisms are transmitted by the blood stream and lodge in the end arteries of the kidney or perirenal fat. When they lodge in the glomeruli they lead to the formation of solitary or multiple abscesses, suppurative nephritis or to carbuncle, which is characterized by a large central area of necrosis surrounded by numerous smaller abscesses. When they lodge in the perirenal fat they give rise to a perinephric abscess. The latter may be secondary to suppurative processes in the kidney, but a kidney abscess is rarely secondary to a perinephric abscess. The diagnosis is sometimes extremely difficult. Renal carbuncle is likely to be confused with influenza, gallbladder disease, appendicitis or other abdominal lesions. It is differentiated from pyelonephritis by the paucity of urine observations as compared to the illness of the patient. Staphylococci are usually present and can be found if the urine is centrifugated for a sufficiently long time. Some important points in diagnosis have not been mentioned. These consist of immobility of the affected side. The diaphragm fails to move with respiration and there is lack of mobility of the kidney, which is easily demonstrated in making a pyelogram in the vertical position. In doubtful cases, an early exploratory incision should be made. Early intervention gives one an opportunity to perform the conservative operation of drainage or excision with cautery. It also lessens the likelihood of invasion of the opposite kidney.

DR THOMAS D. MOORE, Memphis, Tenn. The point that Dr Mathé raised regarding immobility of the kidney is in line with some cases reported in the literature. Some writers have described an almost cartilaginous capsule. This was not encountered in the cases reported.

Investigations with Calorimeter—The Atwater Respiratory calorimeter, the first apparatus of the kind to be used in America, was not only large enough to measure with a high degree of perfection the amount of heat given off by a man at rest or at work, but it was also possible to measure the oxygen consumed, being in many respects the most important form of respiration calorimeter yet devised. The accuracy of the apparatus was remarkable, as was shown by burning a given weight of ethyl alcohol in the chamber the carbon dioxide recovered being 99.8 per cent of the theoretical value and the heat production 99.9 per cent. With this apparatus was inaugurated a series of investigations of the greatest physiological value in the study of human nutrition. A credit to American enterprise and scientific acumen.

Thus they showed that the heat produced by a man in a given period of time is the same in quantity as that which can be derived from the energy liberated in the oxidation of food materials during the same period, that the energy which a man expends at hard work is the exact equivalent of the energy liberated by the body metabolism. Especially noteworthy is the fact that these investigations demonstrated for the first time on man the application of the principle of the conservation of energy to the human organism.—Chittenden R. H. The Development of Physiological Chemistry in the United States. New York: Chemical Catalog Company, 1930.

ROENTGENOGRAPHIC STUDIES IN NORMAL OSSEOUS DEVELOPMENT*

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This study in osseous development, based on the original observations of Engelbach and McMahon,¹ was undertaken (1) to present a more practical and modern set of tables and roentgenograms of the normal osseous development for every year of age from birth to 20 years, (2) to present the opinions of other observers and attempt an explanation of their variations, and (3) to demonstrate further the practicability of such a standard in the differential diagnosis of the endocrinopathies.

Since the studies of Engelbach and McMahon were published, other and varied opinions of independent observers have appeared. While all have been of measurable value in a further elucidation of the subject, a certain amount of confusion persists. It is believed that much of this is based on a diversity of opinion as to what constitutes a normal subject. If it is true that osseous development becomes, at times, an index to biochemical health, the rapid advances in this important phase of medicine makes it increasingly necessary to redefine the term. Heretofore, an individual free from the gross evidence of infectious and parasitic disease, metabolic disturbance, new growth and deformity was considered normal. So-called constitutional inadequacies, unless grossly represented in the somatic make-up or accompanied by signs and symptoms long associated with the older conception of disease, were rarely taken into consideration. The roentgenogram was seldom employed in such a diagnostic capacity.

That retardation of osseous development is pathognomonic of early hypothyroidism is well established. Comparatively few hypothyroid children, however, present the classic evidence of cretinism or myxedema, unless the condition is far advanced. As a consequence, many are considered normal until some outspoken evidence of the deficiency is presented in later life. It is equally certain that the onset of adolescence (gonadal function) has something to do with the epiphyseal closures. In America, this occurs in the female more commonly between the ages of 12 and 14 and yet a girl who began menstruating at 10 and one who has not menstruated at 16 are frequently considered normal, provided they fall within the previously accepted standards. Considering the possibility that many individuals of a like nature have been used in the statistical data gathered by others, it is remarkable that no greater variations have occurred. In my choice of a normal subject, I have attempted to exclude all the endogenous factors which may influence the osseous development from birth to 20 years. After the first year, a variation of six months above or below the accepted standard for the age is considered within the normal.

There is another factor of equal importance, the element of time. Heretofore it has been impossible to determine the exact meaning of such terms as first and second years. For example, many interpret the first year as being anywhere from birth to the first

*Read before the Section on Radiology at the Fifty-Fifth Annual Session of the American Medical Association, Detroit, June 26, 1940.

Because of lack of space this article is published here by the omission of several illustrations. The complete article appears in the author's report.

¹Engelbach, William, and McMahon, Mabel. Osseous Development in Epiphyseal Diaphyseal Fusion. S. J. (J. C.) 1934.

anniversary of the birth day, which is undoubtedly correct. Others look on such a period as lasting until the child is 2 years of age. The latter argue that an infant is 1 year old until its second birthday. In order to obviate this confusion it has become necessary to prepare a series of roentgenograms based on a specific time, namely, the birthday. Since the actual time of

from birth to, and including, the fifth birthday. Osseous centers that are new to the age are indicated by an asterisk, those that were present the previous year, and are merely repeated, do not have the asterisk. Thus the full development is presented each year. Although a study of the six major joints has been made, only those which show some definite change from the

TABLE 1—Roentgenographic Studies in Normal Osseous Development—Infantile (1-5 Years)

Age	Joint	Osseous Centers Present	Time of Appearance According to							
			Lacubach Shenton	Baetjer Water	Knox	Rotch	Poland	Cohn	Allen	
Birth	Knee (Lat)	Dist ep femur	Birth	Birth	Birth	Birth	2d week	Birth	Birth	
		Prox ep tibia	Birth	Birth	Birth	Birth	2d week	Birth	Birth	
	Ankle (Lat)	Talus cuboid	Birth	Birth	Birth	Birth	Birth	Birth	Birth	
		Calcaneus	Birth	Birth	Birth	Birth	Birth	Birth	Birth	
1 year (12 mo)	Wrist (AP)	Capitate	11th mo	1st yr	1st yr	1st yr	6th mo	6th mo	3-6 mo	
		Hamate	11th mo	1st yr	1st yr	1st yr	1st yr	6th mo	3-12 mo	
	Shoulder (AP)	Dist ep radius	1st yr	1st yr	1st yr	1st yr	1st yr	6th mo	3-12 mo	
		1 p head humerus	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	
	Hip (AP)	1 p head femur	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	
		1 p head femur	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	
2 years (24 mo)	Ankle (Lat)	Talus cuboid	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	
		Calcaneus	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	
	Shoulder (AP)	Dist ep radius	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	
		1 p head humerus	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	
	Elbow (AP)	Cap humerus	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	
		1 p head humerus	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	
3 years (36 mo)	Ankle (Lat)	Talus cuboid	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	
		Calcaneus	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	
	Wrist (AP)	Dist ep radius	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	
		Capitate	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	
	Ankle (AP)	Dist ep radius	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	
		1 p head humerus	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	
4 years (48 mo)	Ankle (Lat)	Talus cuboid	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	
		Calcaneus	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	
	Wrist (AP)	Dist ep radius	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	
		Capitate	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	
	Ankle (AP)	Dist ep radius	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	
		1 p head humerus	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	
5 years (60 mo)	Ankle (Lat)	Talus cuboid	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	
		Calcaneus	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	
	Wrist (AP)	Dist ep radius	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	
		Capitate	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	
	Ankle (AP)	Dist ep radius	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	
		1 p head humerus	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	1st yr	

* Osseous centers new to the age are denoted by an asterisk. Lat lateral view, AP anteroposterior view.

appearance and union of an ossification center will ever be variable within a certain number of months, the occurrence is considered relatively unimportant. The practical application resolves itself into a series of comparative roentgenograms for a given age.

INFANTILE PERIOD

Table 1 shows the joint to be roentgenographed and the osseous centers which we consider normally present

previous year are considered. The wrist, for example, is used at 1 year (12 months) but not again at 2 (24 months), since there is no additional osseous development aside from the general growth of that already present. At 3 (36 months), however, the wrist is again considered to show the presence of the triangularis and the epiphyses of the metacarpals and phalanges which have appeared sometime during the course of the previous year.

It can readily be seen that the observers Baetjer and Waters,² Knox,³ Rotch,⁴ Poland,⁵ Cohn,⁶ and Allen⁷ are in remarkable accord, as to the time of appearance, during this period of life. All of them, with the exception of Poland, whose observations were made many years ago, agree that the distal epiphysis of the femur and the proximal epiphysis of the tibia, together with the talus, cuboid and calcaneus, should be ossified at birth. It is therefore evident that the absence of these nuclei in the knee and ankle would point to a retardation of osseous development during the intra-uterine period, prematurity, of course, excepted

cretins in whom slight modification of stature is noted, but markedly retarded differentiation of somatic tissue occurs. It appears reasonable, then, to assume that an absence of one or more of these nuclei at birth is an early and recognizable sign of hypothyroidism. The same relative need for a standard of comparison holds true throughout the infantile and juvenile years in which means of estimating the basal metabolic rate are as yet inadequate. Figure 3 shows the wrists of three hypothyroid children compared to the normal for the age. Not one of these patients presented the classic textbook picture of cretinism.

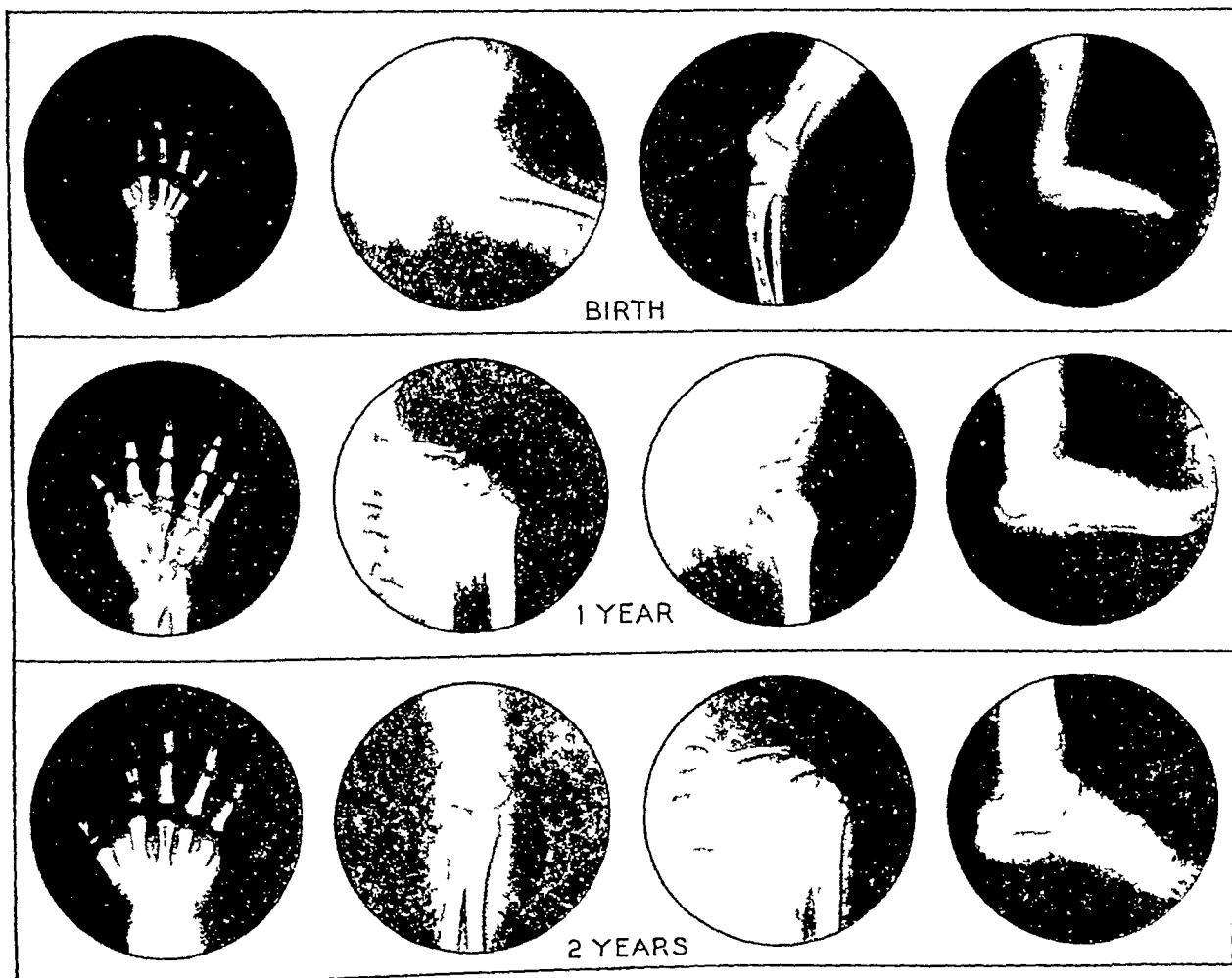


Fig. 1—Normal osseous development infantile from birth to 2 year

Figures 1 and 2 show the roentgenograms that pertain to this age.

From a study of the phylogenesis of the endocrine system, borne out by the work of B. M. Allen and others in the removal of the thyroid anlagen in tadpoles, one is led to believe that the thyroid produces a hormone of tissue differentiation rather than one of growth. There is clinical evidence of this in many

True mongolism, birth injuries and other forms of mental deficiency do not consistently retard the unfolding of the osseous system, although hypothyroidism is occasionally associated with such conditions and must consequently give a confused picture. Rickets may be easily excluded by clinical and roentgenologic observations peculiar to the disease. Of equal importance are the endocrinopathies that tend to further the somatic growth. Hypergenitalism (precocious development and function of the genital system), the etiology of which is more or less obscure, is always accompanied by a rapid unfolding of the osseous system with an early closure of the epiphyses. Figure 4 shows the hand of a child with microgenitosomia and one with hypothyroidism compared to a normal for the age. Not

² Baetjer, F. H. and Waters, C. A. *Anatomy and Development of the Bones and Joints*. New York: Paul B. Hoeber, 1919.
³ Knox, Robert. *Pathography and Pathology*. New York: Macmillan Company, 1919.
⁴ Rotch, T. M. *The Development of the Bone in Early Life*. Tr. A. Am. Physician, 1919.
⁵ Poland, Traumatic Separation of Epiphysis. (Out of print).
⁶ Cohn, Isidore. *Normal Development of the Bone*. New York: Paul B. Hoeber, 1924.
⁷ Allen, B. M. University of California, Berkeley, personal communication to the author.

only is the roentgenologist able to predict something of the subsequent development in such an individual but a closer study would, in all probability reveal points in the diagnosis of hitherto unsuspected value

JUVENILE PERIOD

Table 2 (from 6 to 12 years) shows the additional osseous centers and the beginning of the unions particularly between the ischium and the pubis and between the trochlea and the capitellum. It will be seen that the greater the age, the greater the variation of the authorities. As pointed out by Pryor,⁸ Bundy Allen⁹ and others, sex begins to play an important part in the latter

menstruation or, in the male, by hyperplasia of the genital apparatus. There are borderline cases, however particularly in the younger ages, which only a comparative roentgenogram will reveal.

The role assumed by the anterior lobe of the hypophysis in growth and development, with its two distinct hormones, the one effecting general somatic growth the other, genital development and function, affords excellent opportunities for roentgenologic research. Early gigantism, characterized by unusual deposition of calcium salts together with rapid growth of the long bones, and its antithesis, hypophyseal infantilism, are more easily recognized by a comparative study. Hypo-

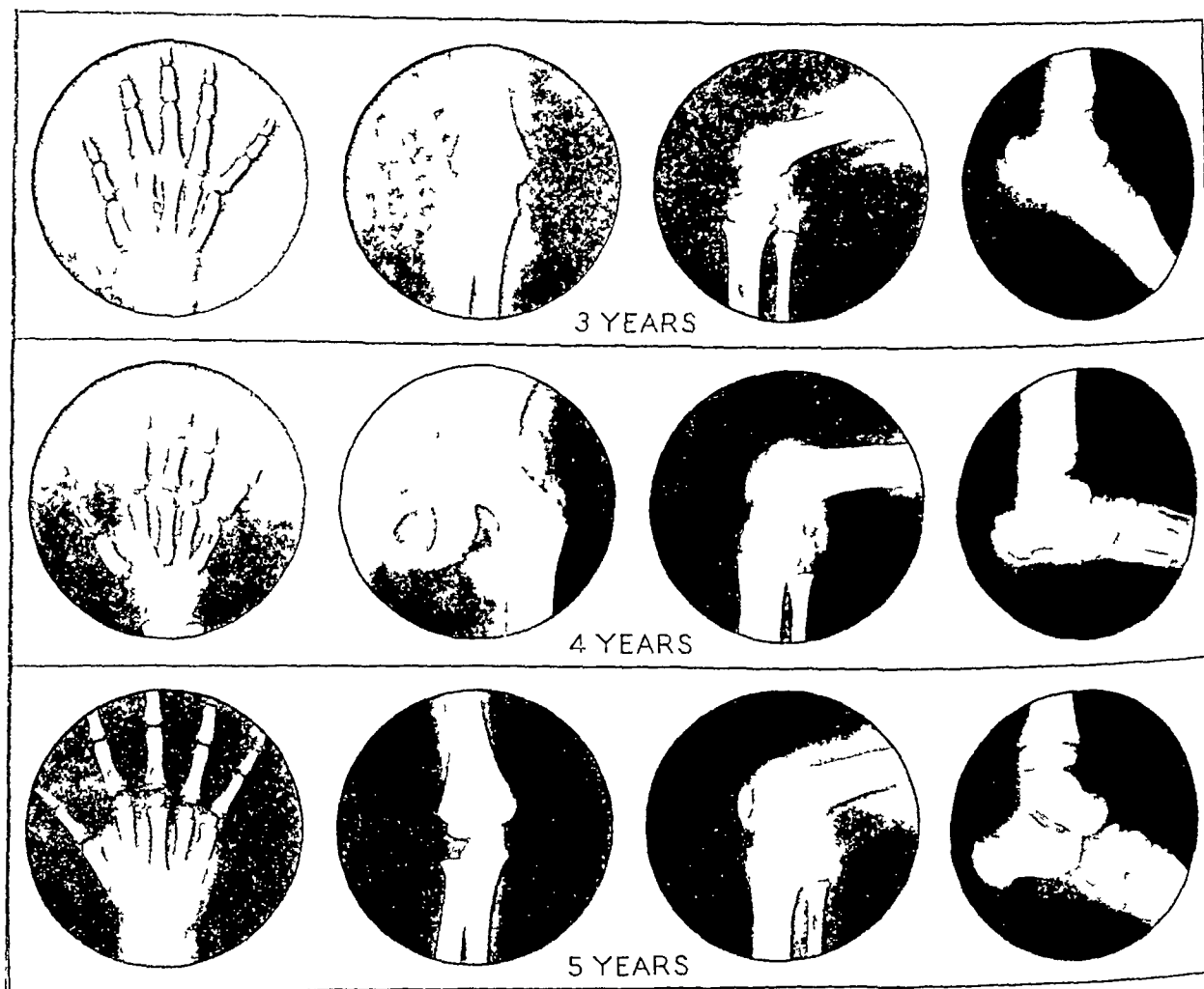


Fig. 2.—Normal osseous development infantile from 3 to 5 years

years of this epoch, the female tending to be slightly in advance of the male. It is my belief, however, that no great difference occurs in the normal before the thirteenth birthday and that for practical purposes one table for both sexes, considering the variation allowed, is adequate. Figure 5 shows the roentgenogram pertaining to the age. The practicability of such a normal standard is again urged in the diagnosis of premature, retarded or arrested development. Precocity may be otherwise obvious, as shown by the early onset of

thyroidism, with or without the association of other endocrinopathies, may, if congenital, or if acquired and of long standing, be demonstrated quite as effectively in this period. Figure 6 presents the hands of three hypothyroid children in the juvenile age compared to the normal. A marked retardation of osseous development is noted in the classic cretin, aged 8.

ADOLESCENT PERIOD

It has long been known that gonadal function plays an important part in the closing of the epiphyses. It is equally well established that the onset of adolescence is variable within a certain number of years. From a recent study of the students in a private school for

⁸ Pryor, J. W. Difference in the Time of Development of the Centers of Ossification in the Male and Female Skeleton. *Anat. Rec.* June 1923.
⁹ Allen, Bundy. An X-Ray Study of the Development of the Ossification Centers of the Skeletal System. *Radiology* 7: 398 (Nov.) 1926.

girls in California, it was found that 80 per cent of those considered free from endocrine disturbance menstruated first between the twelfth and fourteenth birth-

or no care was taken to exclude those girls maturing much later, who were probably suffering from metabolic imbalance

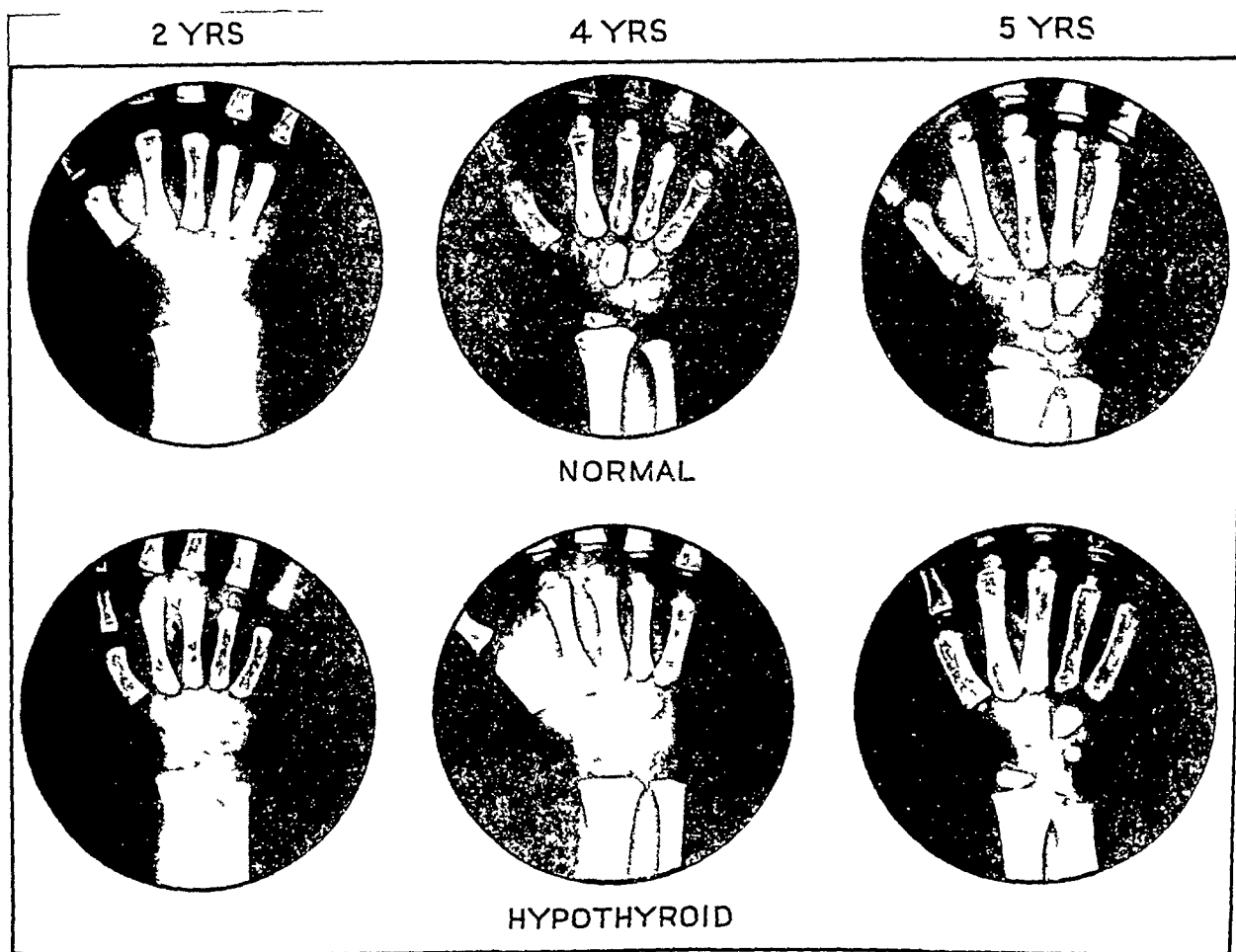


Fig. 3—Carpal centers of hypothyroid children compared with normal

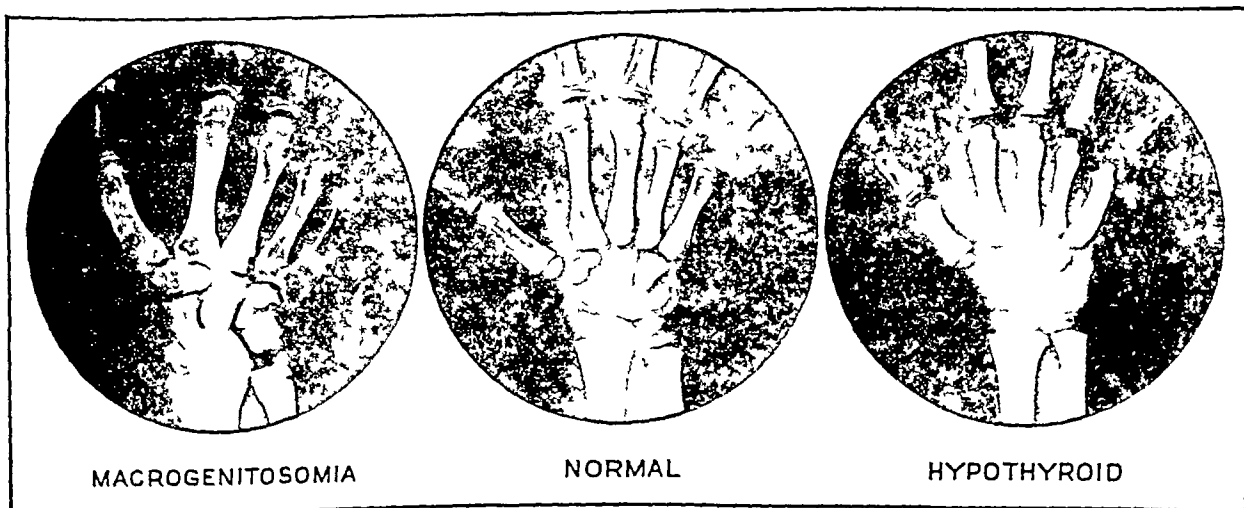


Fig. 4—Variation of carpal centers in endocrine disorder at the age of 6 years

day with an average of 15 years. While this is slightly in advance of the general average for the United States it must be remembered that in previous statistics little

In these years also a remarkable difference is first noted between the sexes. While it is much harder to determine the exact time of onset of male adolescence,

it must be conceded that it occurs on the average of from one to two years later than in the female. In a like study on the students of a private school for boys it was found that approximately 70 per cent of

those considered developed secondary sex characters and had the first spontaneous ejaculation between the ages of 14 and 16 with an average of 15 years. Ninety per cent of the remainder came within six months of

TABLE 2—Roentgenographic Studies in Normal Osseous Development—Juvenile (6-12 Years)

Age (years (mo))	Joint	Additional Osseous Centers and Union	Time of Appearance and Union According to						
			Immun- Shelton	Baetjer Waters	Knox	Rotch	Poland	Cohn	Allen
6 years (6 mo)	Wrist (VI)	Trapezoid Dist ep ulna	4th yr 4th yr	4th yr 4th yr	4th yr 4th yr	4 5 yr 4 7 yr	4 5 yr 4 5 yr	4 5 yr 4 5 yr	4 5 yr 4 5 yr
	Elbow (VI)	Int cond humerus	6th yr	6th yr	6th yr	6th yr		7 11 yr	5 5 yr
	Shoulder (VI)	Union head and gr tub humerus	6th yr	6th yr	6th yr	6th yr		4 5 yr	
8 years (8 mo)	Hip (VI)	Union Isthm and pulis	7th yr	7 5 yr	7 5 yr	7 5 yr		7 7 yr	7 10 yr
8 years (8 mo)	Knee (AP)	*Depression for collateral cart I p os calc	5th yr 5th yr					5th yr 5 9 yr	7 10 yr
9 years (10 8 mo)	Elbow (Int)	*Trochlea Olecranon	6th yr 9th yr	10 11 yr 8 1 1 yr	11 1 1 yr 10th yr	10th yr 10th yr		8 9 yr 8 10 yr	10th yr
10 years (10 0 mo)	Wrist (VI)	*1stiform epiphysis of trachea	10th yr	8 11 yr	10th yr	12th yr	12th yr	10 12 yr	9 13 yr
	Hip (AP)		10th yr	11 1 yr	1 14 yr	1 14 yr	1 14 yr	9 11 yr	8 11 yr
11 years (13 2 mo)	Elbow (VI)	Int cond humeri	11th yr	1 14 yr	1 14 yr	1 14 yr		11 yr	1 14 yr
	Knee (Int)	Lateral tibia	11th yr					11th yr	
12 years (14 mo)	Elbow (AP)	Union trochlea and capitulum	1 14 yr	10th yr	1 14 yr			11 13 yr	

TABLE 3—Roentgenographic Studies in Normal Osseous Development—Female Adolescent (13-18 Years)

Birthdays	Joint	Union Ep with Diaphysis	Time of Union According to						
			Shelton	Baetjer Waters	Knox	Rotch	Poland	Cohn	Allen
17th 18th	Elbow (Int)	Olecranon	1 14 yr	17th yr	16th yr			14th yr	14th yr
	Ankle (Int)	I p os calcis	1 14 yr	18th yr	1 14 yr	1 14 yr		15th yr	15 20 yr
14th 16th	Elbow (VI)	1st condyle Head radius	14 1 yr	18 10 yr 16 17 yr	16 17 yr 17 18 yr			16 17 yr 14th yr	16 17 yr 15 20 yr
	Hip (VI)	Trochanters Head femur	14 1 1 yr	17 18 yr 17 18 yr	17 18 yr 18th yr	18th yr	18 1 1 yr 17th yr	18 1 1 yr 18 1 1 yr	18 1 1 yr 18 1 1 yr
	Wrist (VI)	I p phalanges I p metacarpals	14 1 yr	16 17 yr 17 18 yr	18 20 yr 18th yr			18th yr	18 20 yr
	Ankle (AP)	I p phalanges I p metatarsals	14 1 1 yr	17th yr	18 0 yr			18th yr	18 20 yr
16th 18th	Ankle (AP)	Dist ep tibia Dist ep fibula	16 17 yr	17 18 yr 18 20 yr	18th yr 20th yr		18th yr 18 21 yr	18th yr	20 22 yr
17th 19th	Wrist (AP)	Dist ep radius Dist ep ulna	17 18 yr	17 18 yr 18th yr	20th yr 20th yr		19 21 yr 20 21 yr	20 21 yr	20 21 yr
	Shoulder (VI)	Head humerus Gr tuberosity	17 18 yr		20th yr 20th yr		18 20 yr 20th yr	18 20 yr	18 19 yr
	Knee (VI)	Dist ep femur Prox ep tibia Prox ep fibula	17 18 yr	18 20 yr 18 20 yr	20th yr 20th yr		20 22 yr 21 22 yr 20 22 yr	19th yr 19th yr 19th yr	20 22 yr 20 22 yr 20 22 yr

TABLE 4—Roentgenographic Studies in Normal Osseous Development—Male Adolescent (15-20 Years)

Birthdays	Joint	Union Ep with Diaphysis	Time of Union According to						
			Shelton	Baetjer Waters	Knox	Rotch	Poland	Cohn	Allen
14th 16th	Elbow (Int)	Olecranon	14 1 1 yr	17th yr	16th yr			14th yr	14th yr
	Ankle (Int)	I p os calcis	14 1 1 yr	18th yr	1 14 yr	15th yr		15th yr	15 20 yr
17th 19th	Elbow (AP)	1st condyle Head radius	1 16 yr	18 10 yr 16 17 yr	16 17 yr 17 18 yr			16 17 yr 14th yr	16 18 yr 15 20 yr
	Hip (AP)	Trochanters Head femur	1 16 yr	17 18 yr 17 18 yr	17 18 yr 18th yr	18th yr	18 20 yr 19th yr	18 20 yr 18 20 yr	18 20 yr 18 20 yr
	Wrist (AP)	I p phalanges I p metacarpals	1 16 yr	16 17 yr 17 18 yr	18 20 yr 18th yr			18th yr	18 20 yr
	Ankle (VI)	I p phalanges I p metatarsals	15 16 yr	1 14 yr 17th yr	18 20 yr			18th yr	18 20 yr
17th 19th	Ankle (VI)	Dist ep tibia Dist ep fibula	17 18 yr	17 18 yr 18 20 yr	18th yr 20th yr		18th yr 19 21 yr	18th yr	20 22 yr
18th 20th	Wrist (AP)	Dist ep radius Dist ep ulna	18 19 yr	17 18 yr 18th yr	20th yr 20th yr		19 21 yr 18 20 yr	20 21 yr 20 21 yr	21 22 yr 20 21 yr
	Shoulder (AP)	Head humerus Gr tuberosity	18 1 1 yr		20th yr 20th yr		18 20 yr 20th yr	18 20 yr	18 19 yr
	Knee (AP)	Dist ep femur Prox ep tibia Prox ep fibula	18 1 1 yr	18 20 yr 18 20 yr	20th yr 20th yr		20 22 yr 21 22 yr 20 22 yr	19th yr 19th yr 19th yr	20 24 yr 20 24 yr 20 22 yr

these limits. This argues an approximate two year difference between the sexes in the onset of adolescence. For these reasons it was thought best to consider the sexes separately and to allow a two year variation in each. As in the previous studies, the word birthday has been used in place of year or age in order to avoid the conflicting interpretation. Tables 3 and 4 schedule the normal time of unions in this period. Using the wrist and hand of the female to demonstrate, it will be seen that I believe the phalanges and metacarpals should close sometime between the fourteenth and sixteenth birthdays. Union before the earlier age or open epiphyses after the later is to me an indication of hor-

physeal closures will also be delayed, and whether the growth producing hormone is normal or in excess there will be a continued growth of the long bones with subsequent eunuchoid measurements. If, however, both growth and genital hormones are markedly deficient, one sees the true type of hypophyseal infantilism—an individual much smaller than normal with no primary or secondary sex characters and epiphyses still open a number of years after they should be closed. Figure 11 shows the hand of a girl 13 years of age, who menstruated before 11 (probably because of a hypergonadism, as a result of excess genital hormone from the pituitary) compared to the hand of one who has not

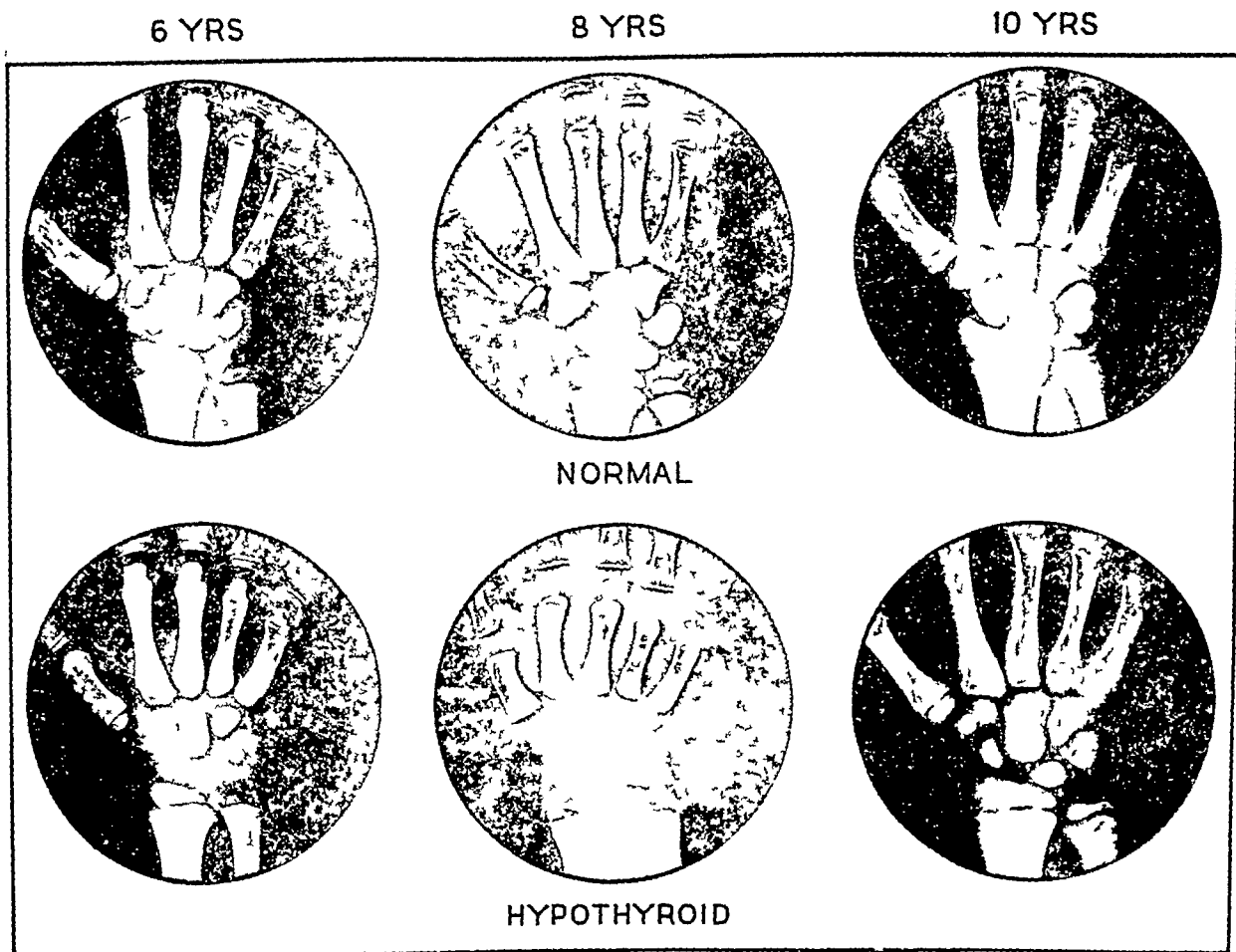


Fig. 10.—Carpal center of 6, 8, 10-year children compared with normal.

monal imbalance, deserving further investigation. Figures 7-10 present the accompanying roentgenograms.

As brought out previously, a deficiency or hyperactivity in its incipience may or may not be reflected in the somatic make-up. The roentgenogram often remains the most valuable aid in diagnosis. Very early closures indicate a hyperactivity of the genital hormone of the anterior lobe of the hypophysis with its resultant hypergonadism, early menstruation, behavioristic problems and cessation of growth. If the growth hormone predominates, there is a potential gigantism that is checked only by the epiphyseal closures after the onset of adolescence. If adolescence is delayed either by primary hypogonadism or by hypogonadism resulting from deficient hypophyseal genital hormone, the epi-

menstruated at 17 years 4 months and is suffering from hypogonadism (as a result of deficient genital hormone from the pituitary) and one of 19 years 6 months who has not menstruated (as a result of primary hypogonadism). The last patient is eunuchoid.

It is therefore apparent that the balancing of the internal secretions accounts in a large measure for the skeletal make-up and that the roentgenologist has within his province one of the best means of diagnosing the endocrinopathies in their incipience. It is with the hope that a greater interest in the subject will be stimulated that this paper is presented.

Observations are still in progress that may further modify the standards during the adolescent age.

34 West Micheltorena Street

ABSTRACT OF DISCUSSION

DR ARTHUR ERSKINI Cedar Rapids, Iowa I shall not attempt to discuss the scientific material presented but I would like to say a word about the paper itself This is the kind of a paper I think we should hear more often Dr Shelton stated at the start what the purpose of the paper was and proceeded to make his points and tell his story in clear concise and correct English, in admirable presentation Furthermore Dr Shelton read his paper in a voice that could be heard and understood I would also like to compliment Dr Shelton on his ability to put such a tremendous amount of information into tables I can say for myself and probably for every one who heard the paper that he has done as he intended to do—stimulate interest in this subject

DR L T LE WARD New York Some years ago in attempting to tell age around 18 years in examining recruits for the army, it was thought that there was a guide in this work but the variation that seems to occur in individuals is so great that, unless Dr Shelton feels differently it would be very difficult in supposedly normal individuals to estimate age when the patient or the individual denies that he or she is of the supposed age that the epiphyses would indicate The same question has arisen occasionally in the United States courts in connection with immigration It is necessary for a Chinaman who claims to be the son of a citizen of the United States to prove his claim to the satisfaction of the immigration authorities If the apparent age of the immigrant differs greatly from the claimed age, it is exceedingly difficult for him to prove his claim especially if he has not reached his twenties If the immigration authorities obtain a certificate from a physician in the United States Public Health Service that the immigrant is three or four years younger or older than he claims to be testimony of other physicians to the contrary apparently do not help him There are two cases involving this question now pending in the United States Court for the Southern District of New York in one of which the x-rays were used to show the growth of certain bones Along similar lines I was asked to study the growth of a gorilla, a baby gorilla that has been in captivity now about a year It may be of some interest to Dr Shelton to know that the growth in the epiphyseal development in this gorilla is more than double that of the human subject for the same period Dr Noback of the New York Zoological Society presented the case to me as one in which the gorilla was supposed to be of a certain age, say 6 months when it was captured I roentgenographed it a few months later and one year after that In that one year the epiphyseal development of the carpal bones was equal to the growth of between two and three years in the human subject I do not know whether these observations have been made before but they are rather interesting I am also studying the epiphyseal development of a young female chimpanzee I understand that a chimpanzee was born in Philadelphia a few months ago and it may be possible that, if somebody would study both the gorilla and the chimpanzee he would find that there is a decided difference in the age growth of the epiphyseal lines

DR F K SHELTON, JR, Santa Barbara, Calif I hope that this work will be found of some practical value It is presented merely as a diagnostic method and is subject to the same criticism When used with clinical judgment I feel that it will be helpful in the differential diagnoses of all metabolic disturbances affecting the bony framework

Aschoff Bodies—Most pathologists hold that the Aschoff node is a specific rheumatic lesion Attempts to produce it experimentally in animals have never been entirely successful, although foci in the myocardium bearing some resemblance have been demonstrated by Carey Coombs, Birkhaug Small and others But, as Miller has pointed out, great caution must be exercised to avoid mistaking the normal for the abnormal animals Heart lesions not unlike Aschoff bodies were found not only in animals inoculated with joint fluids and whole blood from cases of acute rheumatism, but also in a number of controls which had received no injection—Poynton F J and Schlesinger Bernard Recent Advances in the Study of Rheumatism, Philadelphia P Blakiston's Son and Co Inc 1931

ILLRPE'S ZOSTER WITH VARICELLA

A CLINICOPATHOLOGIC STUDY *

R R McCORMICK, MD

FINDLOTT, N Y

The subject of interrelationship of diseases is wide in extent and clinical observation is vast in its scope Progress in the study of this interrelationship is being maintained by the observation of immunities created by certain acute diseases to other diseases, equally acute or chronic

The occurrence of four cases of herpes zoster simultaneously, among apparently healthy young adults in contact in the same occupation, evoked some interest Further interest was created in that one of the patients on the twelfth day following the appearance of the herpes zoster, developed a generalized varicella

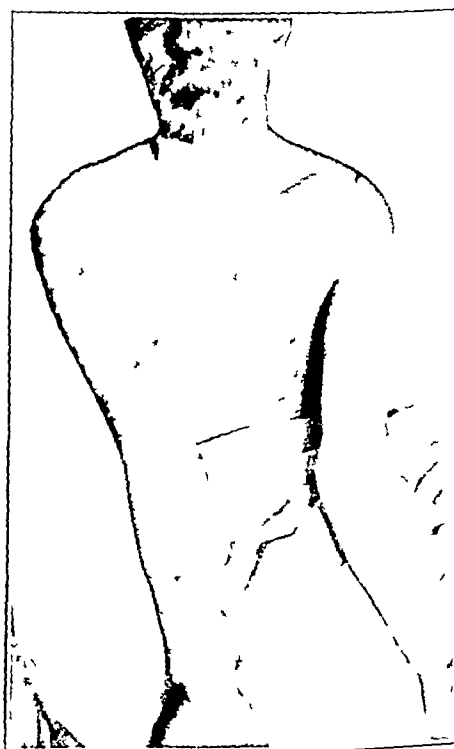


Fig 1—Distribution of vesicles and papules on front of forearm Papules in hemorrhagic and pustular stages may be seen

like eruption As the cases occurred in midwinter in the midst of a rather severe epidemic of varicella, a clinical relationship between the two diseases was apparent

Literature dealing with the association of herpes zoster and varicella is becoming increasingly voluminous both in the quantity of clinical cases observed and in the experimental work being performed In 1888 von Bokay¹ of Budapest first reported the possibility of a relationship between herpes zoster and varicella He observed a child who developed typical varicella ten days after an eruption of thoracic herpes zoster in another child in the same family There was no evidence of exposure to ordinary varicella Morley²

*Read before the Section on Nervous and Mental Diseases at the Eighty First Annual Session of the American Medical Association Detroit June 25 1930

¹ von Bokay J Ueber der atologische Zusammenhang der Varicellen mit gewissen Fallen von Herpes zoster Wien Klin Wchnchr 22 1323 1909

² Morley H S Herpes Zoster and Varicella Brit M J 1 42 (March 21) 1925

reports the case of a girl returned home from school suffering from herpes zoster, her brother, who had been playing with her but had not been exposed to any other infectious case, developed typical varicella thirteen days after the return of the sister. A second case he reports of a boy, aged 5, who developed a right lumbar herpes zoster sixteen weeks after the onset of an anterior poliomyelitis. The zoster eruption was followed in five

herpes zoster in the same individual. Varicella in one individual may be followed by herpes zoster in another.

REPORT OF CASE

History—The patient who developed the varicella-like eruption on the twelfth day after the appearance of the herpes zoster was a white man, aged 23, unmarried and engaged as a shipping clerk. He had never been vaccinated, had had typhoid at 7 years of age, was certain he had chickenpox at 8 years, had had chronic eczema of the scalp for the past ten years, and had acute urethritis (gonorrheal) three years before and chancre of the left side of the scrotum one year before. A blood Wassermann reaction three years before was negative. Ten months before the onset of the herpes zoster he developed a tabetic gait, which was gradual in its onset.

Examination—The patellar reflexes were exaggerated. The pupils were equal and active and reacted to light and in accommodation. Romberg's sign was positive. The tabetic gait gradually became more exaggerated until he was admitted to the hospital for treatment. On examination he was found to have a partial motor paralysis, a loss of sense of position and a paresthesia of both lower limbs. The urinary bladder and rectum were not involved. The paresthesia of the skin extended up to about the level of the umbilicus. The temperature was normal, there was a leukocytosis of 12,000. Repeated examinations of the blood and spinal fluid for a Wassermann reaction were reported negative. Spinal fluid examinations showed clear fluid, no increased pressure, a cell count of 2, a very slight trace of sugar, a slight trace of globulin, smear organisms negative, cultures negative for bacterial growths and a colloidal gold curve of 0001321000. Rest of five weeks in the hospital and the administration of sodium iodide resulted in a rapid improvement, which continued to an apparently permanent recovery.

Course—Dec. 30, 1929, the patient developed a herpes zoster involving the area covered by the distribution of the lower left thoracic nerves. Eight days later (Jan. 6, 1930) he was admitted to the hospital with an extensive zoster of the left

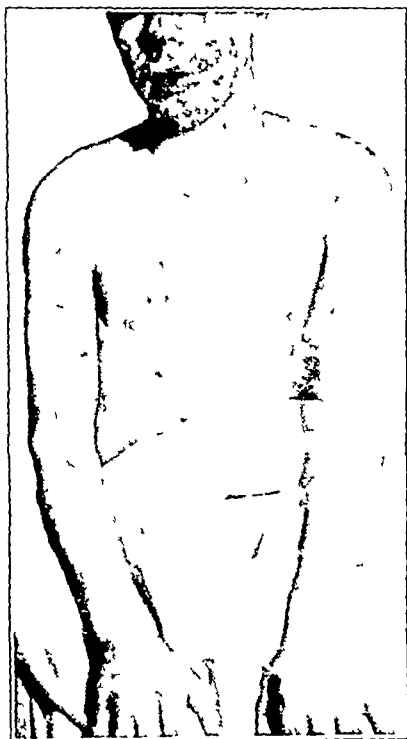


Fig. 2.—Distribution of vesicles and papules on back of forearms and hands.

days by a generalized varicellous eruption. Thirteen days later, two cases of varicella occurred in contact patients in the same ward. Herpes zoster with aberrant vesicles (herpes zoster generalisatus) according to Parounagian and Goodman³ occurs in elderly, poorly nourished individuals. J. B. and Bedford Shelmire,⁴ in 1927, recorded the case of a man, aged 52, who was certain he had not had varicella but who developed a varicella-like eruption following a herpes zoster of the fifth nerve distribution. Fourteen days after the appearance of the zoster in the father, a daughter who had not been exposed to chickenpox developed a typical varicella eruption. In 1929 Bourgin⁵ reported that in two children aged 11 months and 4 years, respectively, who lived in an isolated community, typical chickenpox developed (within ten days in one child and two weeks in the other) after the occurrence of symptoms of herpes zoster in the mother. Vaccination against smallpox had been done some time previously. No infectious disease had been noted. According to Bourgin the etiologic relation between the herpes zoster in the mother and the chickenpox in the children is indisputable. Herpes zoster in one member of a household may be followed by varicella in another. Varicella may follow



Fig. 3.—Mouth and nose showing almost complete occlusion of nasal orifice; papule on lips; two mucous patches on hard palate.

side involving a band of skin 4 inches in width. Two days following admission (January 8) groups of vesicles developed on the face and upper part of the chest. These vesicles arose from a slightly erythematous base. During the following forty-eight hours numerous vesicles appeared over the entire body. The face and upper part of the chest were now covered with vesicles, papules and a few pustules. Some were umbilicated and presented a distinct stinging feeling on palpation. With remarkable rapidity successive crops of vesicle and papules

Parounagian, M. B. and Goodman, H. *Herpes Zoster Generalisatus*. Arch. Dermat. & Syph. 42 (April) 1933.
4 Shelmire, J. B. and Shelmire, B. L. *Current Herpes Zoster and Varicella*. Arch. Dermat. & Syph. 17 (May) 1930.
5 Bourgin, P. *Relation Between Herpes Zoster and Chickenpox*. Paris med. 2: 442 (Nov. 16) 1929.

appeared and became pustular hemorrhagic and gangrenous. Papules and pustules were present on the palms of the hands and the soles of the feet. Mucous patches, some of large size, appeared on the lips, pharynx and palate in the nostrils and on the glans penis. Pustular lesions were numerous on the scalp. With the development of the generalized eruption, the area of herpetic involvement increased. This area showed herpes zoster hemorrhagicus and gangrenosus. There was a generalized enlargement of the lymphatic glands those in the left inguinal region being most marked.

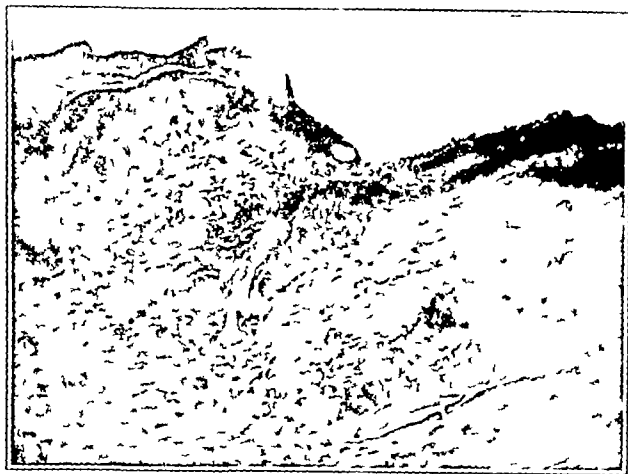


Fig 4—Crater of pock under low power lens. extensive inflammatory exudate extending deeply into tissues

On admission to the hospital the temperature was 99 F. With the appearance of the generalized vesicular eruption it rose to 102.5 F. It remained high the day preceding death being 106 F. Bleeding was frequent from patches in the nostrils, palate and pharynx and occasionally from the urethra. From these numerous mucous patches from the many pustular areas of the skin and from the single large gangrenous region of the zoster, toxic absorption was proceeding. Nourishment was administered with increasing difficulty until vomiting, frequent and blood stained ushered in an extreme alkalosis of the blood. Death took place on the tenth day after admission. The primary cause of death was herpes zoster and varicella; the secondary cause was general sepsis.

Necropsy—A partial necropsy was permitted.

The skin of the entire body was pock-marked and an area over the left side of the trunk appeared gangrenous. Microscopic examination of the pock-marked section showed acute exudative inflammation destroying all layers of the skin and extending into the subcutaneous tissue. Scattered pus cells were contained throughout the subcutaneous tissue. The herpetic section showed gangrenous destruction of all layers of the skin extending into the subcutaneous tissue. There was a slight exudate in the subcutaneous tissue but not as extensive as in the pock-marked section.

Several sections from various areas of the brain were studied with the hematoxylin and eosin stain. The arachnoid showed marked congestion, but no evidence of inflammatory changes or other pathologic conditions. In the glia, no pathologic changes were observed. The blood vessels showed no pathologic condition except congestion. Some of the larger motor cells appeared degenerated giving the appearance of slight vacuolar alteration. Only an occasional cell showed this change and it was limited to the Betz cells. There was some satellitosis about some of the cortical cells in the deeper layers.

The posterior ganglions from the eighth to the twelfth left thoracic were very friable and hemorrhagic. The dura both grossly and microscopically appeared congested; the dural investment of the posterior nerve roots showed cell proliferation. The neurilemma was thickened especially in the portions more

remote from the cord and closer to the ganglions. Microscopically the posterior ganglions were degenerated and hemorrhagic. In a cervical section no pathologic changes were noted other than slight congestion. A dorsal section (level of the tenth dorsal) showed marked congestion, especially in the central part of the cord and in the gray matter. In the left posterior horn was a blood vessel showing a small amount of inflammatory exudate in its adventitial sheath. The large anterior horn cells on the same side showed degenerative changes (vacuolar alteration with swelling and central chromatinolysis) but these changes were not seen to any extent in the opposite anterior horn. Some of the tract cells in the gray matter of both sides appeared degenerated. A lumbar section did not show any pathologic change other than slight congestion. Myelin sheath stains showed no evidence of tract degeneration in any segment of the cord.

RISARCH ON HERPES ZOSTER

The etiology of that group of infectious diseases of which one of the features is a vesicular eruption on the skin is at the present much confused. Rivers has indicated a possible relationship between a series of these diseases beginning with sheepox and horsepox and extending through cowpox, smallpox, varioloid, rasmussen, chickenpox and herpes zoster to symptomatic herpes and epidemic encephalitis. In their clinical manifestations, certain of these conditions resemble one another, others have little in common. One feature present in all of them except epidemic encephalitis is a vesicular eruption of the skin. The responsible agent in most of them is an ultramicroscopic or filtrable virus. In most of the conditions, the skin lesions show similar histologic characteristics. In considering a relationship between varicella, herpes zoster and herpes simplex, similar acidophilic intranuclear inclusion bodies are found in the epithelial cells of the skin lesions. Herpes zoster and varicella attack the epiblastic struc-

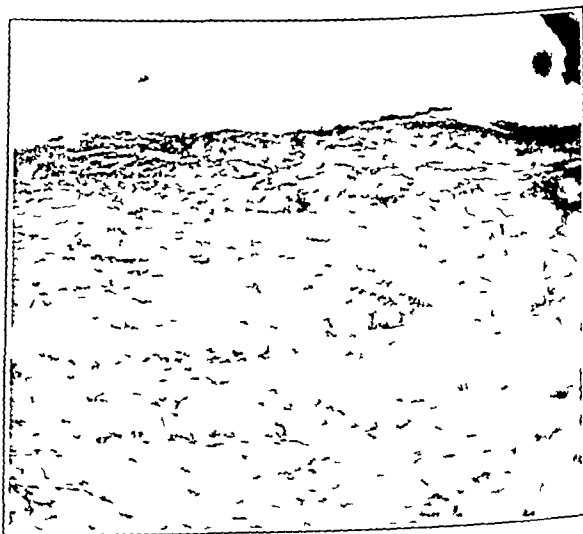


Fig 5—Gangrene of skin under low power lens. Both epidermis and dermis have sloughed away down to muscle layers, which show some inflammatory reaction.

tures viz., the skin and the central nervous system. McDonald⁸ records a case of epidemic encephalitis that was preceded by herpes zoster and followed by varicella. Most of these viruses confer life-long immunity. In the Christmas Islands, where excellent statistics are maintained, herpes zoster occurs frequently. Vari-

6 Alkalosis of the Blood. Sodium Chloride 114 mg per hundred cubic centimeters carbon dioxide combining power 73.9 per hundred cubic centimeters of blood plasma nonprotein nitrogen blood 57 mg of non protein nitrogen per hundred cubic centimeters of blood.

7 Rivers T. M. and Tillett W. S. cited by Cole and Kuttner (foot note 11).

8 Cited by Ibotson E. C. B. Partnerships Combinations and Antagonisms in Disease Philadelphia F. A. Davis Company 1929.

cells is unknown there. This points to duality of the viruses. Le Fevre⁸ believes that there is only one virus which produces herpes in adults and neurotic children, and varicella in normal children.

Rivers and Eldridge⁹ have shown from the statistics of the Bellevue and Vanderbilt clinics and from the department of health of New York City that varicella most frequently occurs in children under 10 years of age, while zoster as a rule is observed in older persons. The number of cases of varicella exhibits a markedly constant seasonal variation. The variations in the prevalence of herpes zoster are not regular and do not

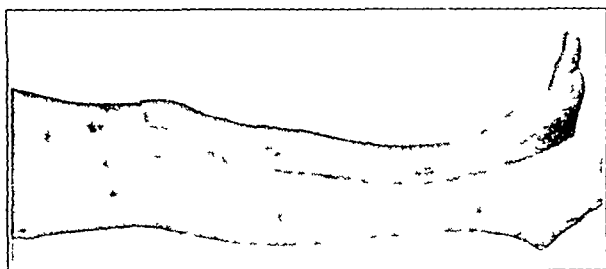


Fig. 6—Generalized distribution of vesicles and papules on legs and feet. The umbilication here is well marked.

parallel those of varicella. These investigators¹⁰ after a series of serum neutralization experiments conclude that the etiologic agents concerned with these two diseases are in the majority of instances not identical.

It is evident that, in order to establish the etiologic relation of an ultramicroscopic virus with one of these diseases, it is necessary to reproduce in animals or man, lesions resembling the natural infection.

Cole and Kuttner¹¹ at the Rockefeller Institute found that their attempts to inoculate rabbits, guinea-pigs and monkeys with material obtained from nine cases of herpes zoster were unsuccessful. However, they note that despite cases of herpes zoster being extremely rare in their hospital, they had two cases develop within a very short period of time from being in contact with a third in the same ward. This they report as suggesting a transference of infection from one patient to the other two.

In a consideration of the transference of herpes zoster to human beings, studies of Kundratitz¹² seem to show that herpes zoster can be successfully transmitted to very young children. In wishing to test out von Bokay's hypothesis,¹³ based on clinical observation, that the virus of varicella may under certain unknown conditions produce a typical picture of herpes zoster and that the virus from this lesion may in turn cause varicella, he attempted to immunize children against varicella by the inoculation of material from herpes zoster cases. He reports that he has inoculated material from ten typical cases of thoracic herpes zoster and has had positive results with the material from five of these cases. In his experiments he maintained that a patch of clear vesicles on an erythematous base developing from nine to twelve days after inoculation was considered as a 'take'. Children who reacted positively

were subsequently shown to be immune from varicella. Positive reactions were obtained only in children under 5 years of age. Children who had previously had chickenpox were immune to the inoculation of zoster material, while those who recovered from the inoculation with zoster material were later found to be immune to chickenpox. Several cases of varicella could be traced to contact with children who had developed localized positive reactions from inoculation with zoster material. Kling¹⁴ has reported the successful vaccination of children against chickenpox by inoculation with vesicular fluid. At times a local vesicle or papule would develop at the site of inoculation and occasionally a generalized eruption would appear (true chickenpox?).

In order to establish the interrelationship in this case between the herpes zoster and the generalized vesicular eruption and to observe the possible creation of an immunity, a child aged 19 months was inoculated with fluid from the vesicles. This child had not had any skin lesion since birth and had not been exposed to any case of varicella. No general reaction was noted as one finds in vaccination against smallpox. A very slight reaction took place at the site of inoculation, consisting of the development of a slight erythematous area and formation of a small papule. This papule soon disappeared and the area healed with slight scarification. The erythematous area and the small papule developed between the sixth and ninth days after inoculation. No rise in temperature took place. The inoculated child developed no generalized vesicular eruption.

SUMMARY

Four cases of herpes zoster occurred among persons in contact during an epidemic of varicella. During the course of the herpes zoster in one case a generalized vesicular eruption developed on the twelfth day. This eruption closely resembled varicella. This generalized

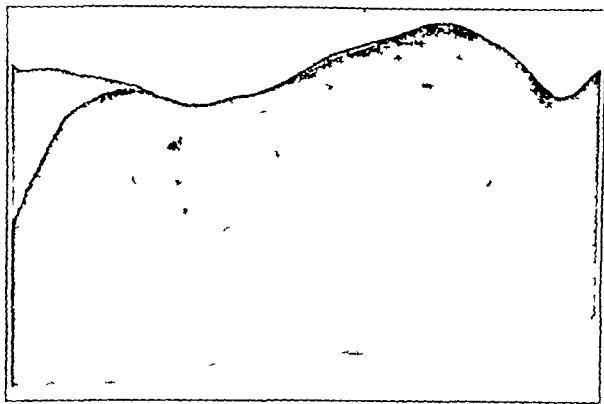


Fig. 7—Posterior view of massive herpetic region showing herpes zoster hemorrhagicus and herpes zoster gangrenosus. Umbilicated vesicles and papules in hemorrhagic and gangrenous stage. New crops of vesicles are appearing.

eruption was extensive involving the skin of the entire body and the mucous membranes. Varicella ordinarily a very mild infectious disease occurring during the course of a herpes zoster produced a fatal sepsis due to extensive gangrene of the skin. No cases of varicella developed from contact with this case during the period of the generalized eruption. An infant aged 19 months inoculated with vesicular fluid developed a slight local reaction. This infant has since been exposed to cases

⁹ Rivers, T. M. and Eldridge, I. A. Relation of Varicella to Herpes Zoster. Statistical Observations. *J. Exper. Med.* 49: 599 (June) 1929.

¹⁰ Rivers, T. M. and Eldridge, I. A. Relation of Varicella to Herpes Zoster. Clinical and Experimental Observations. *J. Exper. Med.* 49: 907 (June) 1929.

¹¹ Cole, Rufus, and Kuttner, A. C. The Etiology of the Etiology of Herpes Zoster. *J. Exper. Med.* 42: 99 (Dec.) 1923.

¹² Kundratitz, K. quoted by Cole and Kuttner (footnote 11) *ibid.* 50: 805.

¹³ von Bokay, J. *Jahrb. f. Kinderh.* 105: 1924.

¹⁴ Kling (in the case of Melvin of Stockholm). *The Etiology of Medicine* 2: 25.

of varicella in children and has not developed any vesicular eruption

The virus or viruses attack the epiblastic structures

Necropsy observation in lesions of the skin showed severe inflammatory and gangrenous involvement of all layers of the skin. The necropsy on the central nervous system revealed extensive pathologic involvement of the posterior root ganglions and the posterior half of the spinal cord—a posterior poliomyelitis.

204 West Main Street

ABSTRACT OF DISCUSSION

DR DANIEL C. O'NEIL, Binghamton, N. Y. Herpes zoster in persons exposed to varicella has been observed by several clinicians and, though considered to be rare is not uncommon. Ormsly, in 1928 reported a case of herpes zoster associated with varicella in a man aged 37, having a generalized varicella accompanied by herpes zoster of the scalp. It was painful and accompanied by swelling of the face and scalp. Chickenpox is an almost universal disease of childhood and confers a life immunity, leaving few individuals that are not protected in adult life, while herpes zoster is more common in the adult and in later life. The case reported is unusual in that this patient had never had varicella until he was 23 years old, although living in a community where chickenpox prevailed and his family thought that he had the disease in childhood. Secondly, he had a chimeroid infection followed by clinical signs of tabes dorsalis three years previous to his fatal illness and these signs cleared up under treatment with iodides. Thirdly, the blood and spinal fluid Wassermann reactions were always reported negative though the tests were made many times. I examined this patient about two years before the onset of the herpes zoster and at that time he gave every indication of tabes dorsalis, the negative blood Wassermann reaction being the only exception. I am anxious to know whether the con-

varicella associations. In one instance the daughter of a man with zoster developed a generalized moderately mild varicella while he was still convalescing from his zoster. In a second instance the 21 months old daughter of a man with nodular zoster developed varicella twenty days after the onset of the father's zoster and in addition there was a history of two children, playmates of this child, having both developed varicella one week before my patient developed his zoster. Just what the exact relationship in connection with this zoster-varicella association is spoken of? Certainly, not that the two are the same diseases acting differently in individuals of peculiar suscep-



Fig. 9—Degeneration of cord as shown by high power lens perivascular infiltration. Left posterior horn of cord showing inflammatory exudate in adventitial sheath of blood vessel, thoracic region.

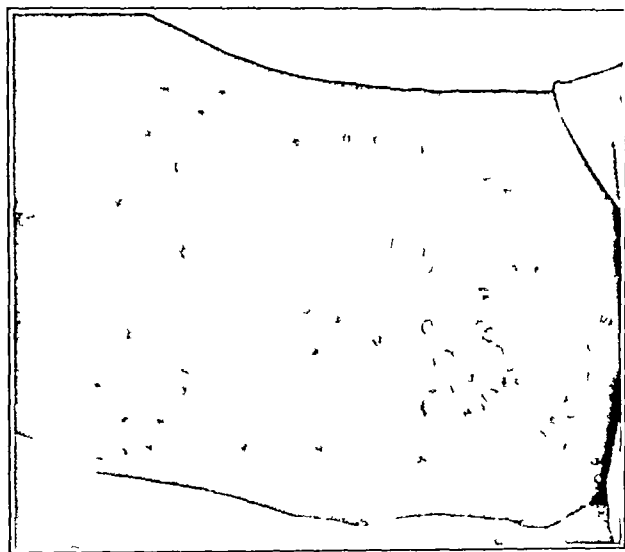


Fig. 8—Anterior view of massive herpetic region showing herpes zoster hemorrhagicus and herpes zoster gangrenosus. Note umbilicated vesicles and papules in hemorrhagic and gangrenous stages. New crops of vesicles are appearing.

dition of the cord found at autopsy can explain the tabetic symptoms in this patient two years before death.

DR SIGMUND S. GREENBAUM, Philadelphia. Since Bokay's first report six years ago concerning a possible relationship between zoster and varicella a considerable literature dealing with the subject has accumulated, none of it however, definitely clears the situation since work on the animal transmission of zoster and varicella is contradictory as are cross complement fixation tests with the serums from sufferers of these diseases. Only the apparent clinical association remains on which an opinion can be expressed. I have observed several zoster-

tibility but that they are different diseases, both due however, to organisms related to one another, as are, for example, the different strains of staphylococci or of streptococci. The different clinical pictures that different strains of these organisms may produce are well known. I do not believe however, that the zoster-varicella association is nearly as frequent as a theory of this sort ought to have to support it, their very rarity is rather in support of the theory of coincidence than of relationship. Finally, 90 per cent of the reported cases can be placed here namely, zoster in one followed or preceded by varicella in others of the patient's entourage. I am therefore of the opinion that all real instances of so called zoster-varicella are either coincidences or merely generalized zoster of varying degree.

DR WALTER FREEMAN, Washington, D. C. In a recent case in which a recurrent carcinoma was present the patient developed zoster in the root zone covering the area of the breast, which had been amputated, and with that was associated the eruption of quite a number of vesicles over the body which had the appearance of varicella but which might well agree with the description that Dr Greenbaum has given of herpes zoster generalisatus. The point I wish to bring up, however, is the location of the pathologic changes of herpes zoster, which has been under discussion for a good many years, some individuals reporting the ganglion involved and some the posterior horn of the spinal cord. In the case that I have studied both were involved but it seemed to me that the posterior poliomyelitis was a secondary thing and that the severe necrotic inflammation of the thoracic ganglions was primary. Moreover, in this instance I was able in the ganglion to find certain intracellular bodies that resembled somewhat the Negri bodies or the Rickettsia that occur in certain other virus diseases, and it seemed to point in the direction of an infectious condition rather than a toxic or metabolic one.

DR R. R. McCORMICK, Endicott, N. Y. In answer to the first question asked, whether the pathologic changes of the cord coincided with the appearance of the symptoms of tabes dorsalis some ten months or a year previous, they did not coincide with the pathologic changes in the cord in tabes dorsalis. I appreciate what Dr Freeman said that the pathologic condition in herpes zoster appears first in the posterior ganglions and spreads secondly into the posterior part of the spinal cord.

Clinical Notes, Suggestions, and
New Instruments

NICKEL DERMATITIS A NEW SOURCE

FAERETT S LAIN M.D. OKLAHOMA CITY
Professor of Dermatology and Radiology University of Oklahoma
School of Medicine

Metallic dermatitis is occasionally observed in the practice of every dermatologist who attends the laboring people of various occupations, more especially by dermatologists who look after the skin eruptions of employees of large public utility and industrial plants. It has been my observation that the occurrence of a dermatitis occurring on the hands and faces of professional polishers and platers, caused by either the solvent or the salt of a metal, is of more frequent occurrence than the leading textbooks would infer.

Nickel dermatitis has been a subject of rather common discussion in European literature ever since Blaschko,¹ in 1889 first called attention to the susceptibility of workers in industrial plants handling nickel. R. Prosser White² relates several incidents of a nickel dermatitis; also he quotes Rambousek in describing nickel rash as occurring in nickel platers and concludes that the disease is most probably caused by the action of nickel salts. A brief review of American medical literature reveals a lack of information on metallic dermatitis of any kind especially nickel, which is apparently one of the most common of the metallic irritants.

Bulmer and Mackenzie³ who made an exhaustive research of a nickel rash common to workers in the International Nickel Plant of Canada, Limited, have written one of the most elucidat-



Fig 1 (case 3)—Appearance of eruption on temple

ing articles in recent years. Their investigations will doubtless become a guidepost to all medical authors who follow.

During the past year I have observed a new source of dermatitis which may have been observed by others though so far as I have been able to find this is the first report of a dermatitis from such a cause. The past spring and summer I observed two unmistakable cases and possibly a third one of a dermatitis occurring on the temples and ears of men wearing spectacles

1 Blaschko Deutsche med. Wchnchr. 18 9. numl. 45
2 White K. P. Occupational Affections of the Skin ed. New York Paul B. Hoeber 19 9 pp. 189 191
3 Bulmer F. M. K. and Mackenzie F. A. Studies in the Control and Treatment of Nickel Rash J. Ind. Hyg. 51 5 (Dec.) 1912

with white gold frames. In each case the frames were made of the so called white gold, reported as an alloy of gold, copper and nickel. In the first case the eruption occurred across the bridge of the nose, though in the second and third the bridge of the glasses was of a different material and the eruption occurred on the temples and ears only.

In the first case merely a suspicion was aroused as to the possible etiologic factor, but no further observation was made. The second and third cases were of varying degrees of eruption though marked by a similar appearance, namely, consisting of a margined erythema with medium sized, pruritic papules



Fig 2 (case 3)—Eruption over and behind ear

extending horizontally over the temples and behind the ears corresponding with the temples of the glasses. The papules which were of medium size were deep red, mildly exudative and apparently originating in the hair ducts and orifices of the glands. The eruption in each case occurred after a period of successive warm days during which the patient had perspired freely over his temples.

After seeing a second and then a third case I began an investigation and learned that the frames were made of white gold by a well known optical company. I immediately wrote to the company explaining my observations and received a prompt courteous reply. Extracts from this letter are as follows:

Complaints of the character referred to in your letter of September 23 have reached us at infrequent intervals and a great deal of time and study has been put into this subject by our laboratory.

The trouble seems to be due largely to nickel that is found in white gold alloy. We believe the action is largely electrolytic that is an electrolytic battery action is produced when there are dissimilar metals and an acid or in some instance an all time fluid present and in contact with these dissimilar metal.

When the perspiration which is an electrolyte acts upon the base metal salts are formed and such action is more pronounced in the presence of heat. It is probably a salt of the nickel that causes irritation of the skin where the metal comes in contact. The irritation seems to be analogous to a trouble that is present in the nickel plating industry called commonly nickel itch.

While our conclusions seem to be rather positive in character the remedying of the situation from the standpoint of correcting the inherent trouble has proved very difficult but we have found that by using solid gold in place of gold filled in the electroplating case the difficulty has been overcome. More recently we have developed a plating process passive in its character but

one that has proved very effective in a great number of cases but whether it is the answer in all cases or not we do not know."

Patient 3 T. W. J., aged 47, whose trouble was similar to that of patients 1 and 2 came to the I am Roland Clinic Sept. 23, 1930 complaining of the dermatitis described extending over the temples horizontally and backward behind the ears corresponding exactly with the temples of the frames as illustrated.

He had been fitted by an ophthalmologist the previous January with spectacles of standard white gold frames. No trouble developed until the latter part of August following a succession of warm days during which time he had been perspiring freely. His attention was attracted by an itching, stinging sensation over the temples and ears which caused him to scratch. A few days later he discovered an eruption which gradually became worse. He consulted a dermatologist in another city who applied mercuriochrome 220 soluble suggesting the possibility of a minor infection.

The eruption continued to grow better and worse until he came to our office two weeks later seeking relief. At that time the eruption was so definitely outlined across the temples and behind the ears that no mistake could be made as to its etiology. After the temples of his glasses were changed to solid gold and he was given the application of cooling astringent lotions for a few days the eruption promptly subsided and has not recurred.

There were no metallic stuns on the skin but close inspection of the frames revealed minute specks of corrosion. I conclude that the eruption was most probably due to the sensitivity of his skin to the metal salt.

CONCLUSION

1. Nickel dermatitis is probably more common outside of nickel plating works and the professional laboratories than text books and medical literature would lead one to infer.

2. Three cases due to new white gold spectacle frames were observed within the same season.

3. In modern times when so much jewelry and so many spectacle frames are made of white gold an alloy containing nickel it is necessary to consider this possible etiology in eruptions occurring on areas of the body in contact with such metals.

Medical Arts Building

A CASE OF URTICARIA AND TOXIC ERYTHEMA FOLLOWING THE ADMINISTRATION OF MONO-iodo CINCHOPHEN

THOMAS H. MILLER, M.D., DETROIT

The case of urticaria and toxic erythema reported here is of especial interest in relation to the numerous cases of atrophy of the liver following the use of cinchophen preparations which have appeared in the literature. As recently reviewed by Rabinowitz,¹ the chief symptoms in all cases were constitutional and cutaneous manifestations with the exception of jaundice were apparently infrequent and relatively unimportant. In enumerating the earliest signs of toxicity, pruritus and urticaria are mentioned. Jaundice was not present in this case and the chief symptom which caused the patient to seek relief, was extreme pruritus due to a generalized urticaria.

REPORT OF CASE

Mrs. M. W., aged 54, seen, Oct. 4, 1930, complained of a generalized pruritus of one day's duration, which was particularly marked on the palms and soles. Her general health had always been good except for frequent severe colds during the winter. There was no history of urticaria or angioneurotic edema but for many years the patient had suffered from a vesicular, oozing dermatitis which developed during summer, on any skin surface that was exposed to the sun. During the winter she was entirely free. There was a history of stiffness of the fingers with, at times, swelling and tenderness of the joints. One year before she had taken mono-iodo-cinchophen for one or two days but had discontinued it because of gastric discomfort. Seven to ten days before the onset of the present illness she had again taken mono-iodo-cinchophen two capsules containing 0.25 Gm. each three times daily and had continued this medication up to the time she was first seen. There was no history

of any other internal medication and there had been no change in the diet or environment.

There was no history of eczema, asthma or hay fever nor any dermatoses in the family. The husband and one son are both living and well.

The patient was well developed and well nourished and apparently in good health. The general physical examination including the respiratory and the cardiovascular systems was negative. The blood pressure was 110 systolic and 80 diastolic. The liver and spleen were not palpable and there was no enlargement detectable by percussion. Abdominal tenderness was not present. The skin showed no icteric tint. The conjunctiva and mucous membranes were clear. Numerous discrete wheals 0.5 cm. in diameter, were scattered over the trunk and extremities and patches of erythema were present, particularly in the suprapubic and axillary regions. A test for dermatographism produced an erythematous streak but no welt was formed.

The mono-iodo-cinchophen was discontinued. The patient was given a saline purgative and in addition to local antipruritic applications she received 10 cc. of calcium gluconate intramuscularly and 1 Gm. of a proprietary preparation of acid calcium phosphate was given by mouth twice daily. For the first six days she also received 50 mg. of ephedrine sulphate by mouth morning and night.

Oct. 5 the urticaria became more severe. The wheals became confluent forming plaques from 2 to 3 cm. in diameter, they were most numerous about the neck, axillae, suprapubic region and across the shoulders. The skin of the palms and soles was thickened, tense and extremely pruritic and there was considerable edema of the vulva. It was necessary to give 10 mms. (0.6 cc.) of epinephrine hydrochloride solution (1:1000 dilution) on four occasions and colloid baths were ordered. During this time the patient complained of a feeling of heaviness in the stomach, nausea, complete loss of appetite, slight mental confusion and dizziness. October 6 she vomited a clear frothy fluid which was colorless. The stools were of normal color but the urine was scanty, odorless and dirty. A specimen for analysis was not obtained. October 7 the urticarial outbreaks became less frequent and less severe and the pruritus was much less marked. At this time patches of morbilliform erythema became more prominent and were present in the axillae, flanks and suprapubic region. October 9 a patch of papulovesicular dermatitis appeared between the breasts. During the next week, the cutaneous disturbances gradually subsided, the appetite returned and the gastric discomfort and vertigo disappeared. A fine, branny desquamation especially marked on the palm was noted October 15. Since that time the patient has felt entirely well.

October 27 percutaneous tests were applied to the extensor surfaces of both upper arms according to the technique described by Schoch.² Mono-iodo-cinchophen being insoluble in distilled water, the linen square was moistened and covered with an even layer of the powder before the patch was applied to the left arm. The dry powder was used on the right arm. A scratch test was performed on the flexor surface of the left forearm the dry powder being applied. Both percutaneous tests were negative after twenty-four, thirty-six and forty-eight hours. The scratch test showed more erythema than did the control and there was slight infiltration at the site but no wheal developed and the test was considered negative.

COMMENT

It is presumed that this case of generalized urticaria and toxic erythema resulted from the ingestion of mono-iodo-cinchophen because that is the only medication that the patient had received, because she had never before had an urticarial attack and because there were no dietary nor environmental factors that could be incriminated. The cutaneous eruption might be interpreted as the result of a specific hypersensitivity to the drug to some product of its oxidation in the body or as a secondary reaction following slight damage to the liver and gastro-intestinal tract with absorption of toxic products. The negative results of the percutaneous tests were anticipated in view of the statement of Sulzberger³ that this test is usually

2. Schoch, A. G. Arspenamine Sensitization Tests Including a Report of Arsenical Dermatitis Due to the Arsenobenzol Radical of Bismarsen. *Am. J. Syph.* 14: 755 (Jan.) 1930.
3. Sulzberger, M. J. Hypersensitivity to Arspenamine in Guinea Pigs. *Arch. Dermat. & Syph.* 20: 669-697 (Nov.) 1929.

1. Rabinowitz, M. A. Atrophy of the Liver Due to Cinchophen Preparations. *J. A. M. A.* 95: 1228-1232 (Oct. 25) 1930.

positive not in the urticaria but rather in cases of dry, erythematous eruptions from drugs, such as arsphenamine dermatitis. The negative result of the scratch test suggests that the urticaria was not an allergic reaction due to a specific agent, in this case mono-iodo cinchophen, as has been pointed out by Jadassohn.⁴ Because of this fact as well as the fact that the constitutional symptoms were sufficiently prominent to give evidence of gastric and possibly hepatic disease, it is believed that the erythema and urticaria were due to the absorption of toxic substances from the liver and gastro-intestinal tract.

SUMMARY

1 In a case of urticaria and toxic erythema in a patient taking mono-iodo cinchophen, nausea, vomiting, anorexia and vertigo were present but there was no jaundice and no clinical evidence of pathologic changes in the liver.

2 The scratch test and percutaneous test with mono-iodo-cinchophen were negative.

3 It is believed that the cutaneous eruption resulted not from a hypersensitivity to the drug as such but rather from toxic substances absorbed from the liver and gastro-intestinal tract.

1510 Eaton Tower

FROZEN SECTIONS PREPARED BY USE OF DRY ICE *

JANIER W. LINDSAY, M.D., E. CLARENCE RICE, M.D., AND
M. A. SELINGER, M.D., WASHINGTON, D. C.

The value of frozen sections of pathologic tissue is being more and more emphasized and is becoming more generally recognized as the application of this form of examination is demonstrated in many of the large clinics and as it is familiarized by frequent and constant employment in one's own laboratory.

Modification of the technique with resulting simplification of the process and reduction of cost will we believe, lead to even more extensive usefulness and remove some of the objections that doubtless occur to many laboratory men. A departure from the standard type of apparatus, with the purpose of eliminating some of the difficulties, is offered.

The special equipment which may be readily attached to any microtome and which is shown in the accompanying illustration consists of an ice chamber with a freezing plate and a plunger with which the ice may be brought into contact with or released from the plate. The freezing material is the commercial dry ice¹ readily obtained from ice cream packers at a small cost. A block of this substance weighing 5 pounds may be kept in the cardboard container in which it is delivered and at ordinary room temperature for forty-eight hours. By the use of thoroughly insulated containers it is hoped to extend the life of a supply beyond this time. However, with this time limit it is seen that many possibilities for preparing sections by the freezing method at long distances from the hospital or even from the city are offered. No other equipment than the fixing and staining materials, a small block of 'dry ice' and a small portable microtome are necessary. The entire apparatus and materials may be carried in a small case.

The large cumbersome liquid carbon dioxide tanks with the difficulty of mounting, dismounting, setting and manipulation during the freezing are entirely eliminated. The familiar blast of the gas escaping from the tank is replaced by complete silence of operation.

The ease of transportation, the absence of noise, the small space occupied, the rapidity of freezing, and ready control of

the hardness of the specimen seem to us to commend the proposed technique to the plan, which is growing in favor, of freezing sections in the operating room so that the results of the examination may be coordinated with the clinical picture and demonstrated at once to the attending physician and surgeon.

The simplicity of the apparatus and low cost of the freezing material will make it readily possible to utilize the frozen section for an unlimited number of specimens, including those from necropsies.

1028 Connecticut Avenue

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, Secretary

POLLEN EXTRACTS-ARLCO (See New and Nonofficial Remedies 1930, p. 29)

The following products have been accepted:

Birch Mixture Pollen Extract Arlco (White Birch Black Birch Yellow Birch in equal parts) Maple Mixture Pollen Extract Arlco (Red Maple Ash-leaved Maple Norway Maple Sugar Maple in equal parts) Oak Mixture Pollen Extract Arlco (White Oak Red Oak Black Oak Swamp Oak in equal parts)

Prepared by the method given for pollen extracts Arlco (New and Nonofficial Remedies 1930, p. 29)

COMMITTED ON FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COMMITTEE ON FOODS OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR CENTRAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary

H-O OATS (QUICK) NEW STYLE

Manufacturer—Heeler-H-O Company, Inc., Buffalo, N. Y.

Description—Oat flakes lightly toasted, cut small and rolled thin to permit quick cooking.

Manufacture—Good grade sound oats are cleaned of all foreign material. The cleaned oats in their natural hull covering are mildly toasted in open pan kilns for four hours. The toasted oats are cooled, de-hulled between stones, and the hulls separated from the oat groats. The groats are cut into small particles by cutting machines. The cut groats are steamed flaked between rolls, cooled and packed in label wrapped cartons. The oat flakes contain practically all of the three portions of the oat—bran, germ and endosperm.

Chemical Composition—

	(proximate analysis)
Moisture	5.0%
Ash	2.0%
Fat (ether extract)	7.1%
Protein (N x 6.31)	15.2%
Crude fiber	1.1%
Carbohydrates (by difference) other than crude fiber	66.2%

Calories—

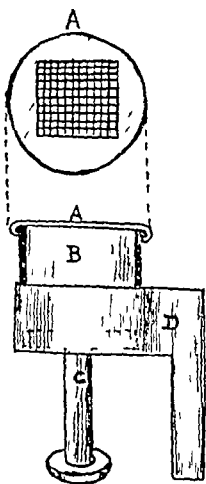
3.91 per gram
111.0 per ounce
1.76 per pound

Ingredients—Vitamins B (complex) and E.

Claims of Manufacturer—H-O Oats (Quick) New Style is a quick cooking breakfast cereal when prepared according to the label directions is well cooked in two to three minutes. H-O is pan-toasted, has a nut brown color, a distinctive baked-in toasted flavor and cooks up firm and meaty and not sticky and pasty. The pan-toasting toasts more than do the processes usually accorded oats and gives a distinct and different flavor.

This cereal supplies abundant food energy, valuable protein, vitamins B (complex) and E, phosphorus and iron.

⁴ Jadassohn, W., Klin. Wchnschr., 19, 133.
From the Pathological Laboratory, Carl-Neuberg Hospital.



Apparatus for utilizing dry ice in preparation of frozen sections. A, gridded freezing plate (metal); B, dry ice chamber (fiber or wood); C, plate carrying ice (fiber or wood); D, clamp and post for attaching to microtome (metal). The apparatus is about twice as large as the picture.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET

CHICAGO, ILL.

Cable Address

Medic Chicago

Subscription price

Seven dollars per annum in advance

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SATURDAY MARCH 7 1931

ADVERTISING AND THE DOCTOR

Although the great American god Advertising apparently controls most of our activities and our interests, it has not thus far succeeded in gaining a complete overlordship in the field of medicine. True, the use of the health claim for the advertising of antiseptics, tooth pastes, foods and most household utilities has become a popular means of approach to the 'health-conscious' public. True, some clinics still promote their services to the indigent and the middle class by extensive announcements in the public press, for this however the plea of holy charity is used in extenuation. Again and again advertising agents seeking some new outlet for the practice of their art have developed campaigns to be financed by medical societies or by individual physicians with a view to placing the wares of the medical profession before the public, as the services of musicians, plumbers, electricians and bakers are advertised. Thus far few medical societies of importance have succumbed to the lure of such promotions.

Several years have passed since various county medical societies in one of the states purchased space to announce some well established facts regarding the prevention of disease. The evidence thus far available indicates that the campaign was not particularly successful in enlightening the public or in bringing increased financial returns to the members of the societies that paid for the campaign. Not long ago several county medical organizations combined with some philanthropic organizations to promote a newspaper campaign for the advancement of the periodic health examination by the family physician, and incidentally by several pay clinics. As far as any information is available there is little evidence that this campaign resulted in any clearly defined saving of lives, any decreased morbidity or any increase in the emoluments of the medical profession.

Some time ago, a promoter of advertising by county medical societies submitted to the Judicial Council of the

American Medical Association a series of advertisements with a view to finding out whether or not publication of such announcements would be considered an ethical procedure. Holding strictly to its function of passing on questions of ethics, the Judicial Council informed the advertising agency that it could see nothing fundamentally opposed to the principles of ethics in that series of announcements. The Judicial Council did not, of course, express the individual views of its members as to whether or not in their opinions such an advertising campaign was advisable or likely to be of service either to the medical profession or to the public.

Reports have reached the headquarters office of the Association to the effect that the compilers and salesmen of this series of advertisements have been visiting newspaper editors in various communities with the suggestion that they induce the county medical society to purchase space for the publication of these announcements. It is reported that some of these salesmen have conveyed the impression that their entire plan has been officially approved by the American Medical Association. This is not true. It is also reported from some sections that officers of the medical society have been informed that publicity would not be given to medical affairs in that community unless the medical society purchased the space for the announcements that have been mentioned. Thus what might be called a diplomatic manner of 'bringing pressure to bear' has been used in an attempt to force the medical society into such expenditure of its funds.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION feels that expenditure of the funds of a county medical society for advertising announcements planned primarily to teach the facts of preventive medicine is not a proper expenditure for a medical organization. Medical education of the public is just as much a function of the press as education in the rules of contract bridge, the technique of golf or the proper training of children. The threat of any newspaper that it will omit scientific news of importance in the field of medicine unless physicians purchase advertising space is an idle threat. Any newspaper worthy of the name must publish scientific news. The vast majority of competent editors are convinced that few other news items are of equal significance at the present day. The newspaper that is dominated in its news columns by its advertising department is on the road to ruin.

The question of the publication of newspaper advertisements by county medical societies would appear not to be so much a question of medical ethics as one of common sense in the field of business. From this point of view, the burden is on the promoter to prove that the spending of money for such announcements provides an adequate return to the purchaser of the announcement, or to the public that such announcements are planned to serve.

PANIMMUNITY

Demonstration of the polio-myeliticidal action of normal adult human serums¹ has raised anew the question as to whether or not such adult immunities are due to previously unrecognized specific infections. The question is of more than academic interest. On its solution depends the interpretation of many epidemiologic data and the feasibility or desirability of many proposed quarantine and vaccination methods. Arguments against previous subclinical infections as a cause of such adult immunities have been drawn from a study of Eskimo children. These isolated children apparently develop the same percentage immunity to diphtheria toxin as children in more crowded environments, diphtheria bacilli being practically unknown in arctic regions.

The most suggestive data, however, are those recently published by Friedberger, Bock and Furstenheim² of the Hygienic-Immunologic Institute, Berlin. These investigators studied the appearance in growing children of "antibodies" against such noninfectious agents as sheep and rabbit erythrocytes, antigens that presumably never came in contact with their internal tissues. They report that the umbilical blood of new-born children contains no recognizable trace of these "antibodies" but that by the end of the first year 20 per cent of all children yield hemolysins and agglutinins for these erythrocytes. This proportion is increased to 60 per cent by the fifth year and to nearly 90 per cent by the tenth year. The hemolysins and agglutinins remain at a relatively high titer throughout adolescence and early adult life and then gradually decrease, giving quantitative curves approximately the same as those previously published for the apparently spontaneous immunization of the adult population to diphtheria and scarlet fever.

Friedberger and his co-workers argue from this parallelism that defensive antibodies are formed and increased in growing children as a result of a general maturation law and that observed mass immunizations to diphtheria, scarlet fever, poliomyelitis and other transmissible diseases are not necessarily due to previous subclinical infections.

This conclusion is of such far-reaching practical significance that a possible error in their logic must not be overlooked. Mutton and rabbits are common articles of European diet. Food proteins are but partially denatured by cooking. Gastro-intestinal absorption of undigested food proteins has been adequately demonstrated by American investigators³ a fact wholly over-

looked by the German investigators. Food proteins are secreted also in mother's milk.⁴ In order to prove that mutton and rabbit "antibodies" are due to a spontaneous maturation panimmunity, it would be necessary for Friedberger and his co-workers to prove that the formation of these "antibodies" is not specifically stimulated by gastro-intestinal absorption of habitual foods.

In spite of this criticism, there are many immunologists who prophesy that a spontaneous maturation panimmunity eventually will be proved.

MOTTLED ENAMEL IN SEGREGATED POPULATIONS

The laboratory and with it the experimental animal frequently play a large part in the determination of the etiology of disease. In some instances the causes of abnormalities have been detected without the help of studies on lower animals. In such investigations dependence is usually placed on vital statistics concerning the groups involved, as was the case with simple goiter and silicosis, on rare occasions, as in the study of the causative factor of yellow fever, opportunity for observations on human beings is afforded. A recent study by Kempf and McKay⁵ of the United States Public Health Service on the cause of mottled enamel in the teeth of certain groups of people in a rather circumscribed locality deserves attention because of the unique opportunity for controlled observations and the directness with which the cause was attributed to the water supply.

The condition of mottled enamel on the teeth is not new or even unusual, as it has been previously observed in various parts of the world. Only infrequently are the temporary teeth affected. The enamel of a mottled tooth may appear a flat, opaque white, may be stained yellow, brown or black, or, in addition to these changes, may have a corroded surface. The brown stain, when present, appears on the labial surface of the upper incisors and bicuspids. The fundamental defect seems to be both in the enamel rods of the tooth and in the cementing substance between them, the former showing an altered shape and the latter being absent. In any attempt to elucidate the etiology of this condition, cognizance must be taken of the fact that the first molars, incisors and first bicuspids are calcified between the first and the eighth years, while the rest of the teeth except the third molars are calcified from the seventh to the ninth years of age. The appearance of mottling in the various teeth therefore is the effect of influence operating some years before the observation is made.

Kempf and McKay studied the situation in a town in Arkansas established by a mining company in 1901.

1. Avcock, W. L. and Kramer, S. D. Immunity to Poliomyelitis in Normal Individuals. *J. Prev. Med.* 4: 189 (May) 1940. Shaugnessy, H. J., Harmon, P. H. and Corliss, F. I. Neutralization of the Virus of Poliomyelitis by Human Sera. *Proc. Soc. Exper. Biol. & Med.* 27: 42 (May) 1930. *J. Prev. Med.* 1: 463 (Nov.) 1931.

2. Friedberger, E., Bock, C. and Furstenheim, A. Zur Antikörperkurve des Menschen durch die verschiedenen Lebensalter und ihre Bedeutung für die Erklärung der Hautreaktion (Schick-Dick). *Z. f. Immunitätsforsch.* 64: 94 1939.

3. Walser, M. Soluble in Absorption of Undigested Protein in Human Beings. *J. Immunol.* 14: 14 (Sept.) 1940. Coats, A. F. On the Dialyzability of Protein. *ibid.* 19: 405 (Oct.) 1940.

4. Dally, H. H. The Question of the Excretion of Food Proteins (the White) in Women. *Med. J. London* 1931 (1): 11-13.
5. Kempf, C. A. and McKay, I. S. Mottled Enamel in a Town in Arkansas. *Pub. Health Rep.* 15: 2423 (Oct.) 1940.

The evidence was gathered by examination of the children in the school, from questionnaires filled out by the children, and from the employment records of the mining company. The original water supply consisted of surface wells and springs, but as the population increased this was supplanted by several deep drilled wells from which the water was piped into the homes. However, many of the families continued to use spring water because of the disagreeable alkaline taste of the deep well water. It was found that all the cases of mottled enamel appeared after the deep well water was provided. The oldest child examined and possessing the dental defect was born about the time the new water system was instituted. A close correlation was shown between the presence or absence of mottled enamel and residence or nonresidence in the town during the calculated period of enamel formation. In children whose enamel was laid down elsewhere mottling was absent, indicating again that it arises only during the calcification of the teeth. Indeed, one child who had lived in the town during the last period of calcification of the incisors, showed only a narrow band of mottling near the gums, while the rest of the tooth was normal, the second molars and cuspids, calcified while the child lived in the town, were entirely mottled. Children attending the school but living out of the town or consuming spring water showed normal enamel.

The data indicate rather strikingly that some factor connected with living conditions strictly within the town is responsible for the mottled enamel. That meteorological conditions can be ruled out would seem reasonable from the fact that children living in the immediate vicinity of the town are not affected. For the same reason, as well as from the fact that the disease appears among the children of both well-to-do and poorer families, the investigators conclude that a dietary factor can be eliminated as the cause. On the basis of the evidence it appears that the drinking water is responsible for the peculiar dental defect, and on these grounds a new domestic water supply has been provided. However, comparative chemical analyses of the two waters have thrown no light on the possible cause of the mottled enamel. It is pointed out that within six or seven years another survey will show whether or not the change has eradicated the disease here as has been done elsewhere by similar measures.

Quite aside from the general health aspect of the situation, the uniform occurrence of mottled enamel in the localized sections presents a unique problem in nutrition. Some obscure factor, not detected by chemical or bacteriologic analysis, operating over relatively long intervals of time during the periods of calcification of the teeth, causes the defect. At present it is thought that the factor occurs in the deep well water rather than in the surface waters or food. Almost every child born and reared in such an endemic

region is sure to be disfigured to a greater or less extent by mottling of the enamel. The solution of the problem is therefore imperative. Modern studies in nutrition have demonstrated the great potency of factors in the dietetic environment which are present in minute traces and which the conventional methods of analysis have failed to detect. The studies here discussed have gone a long way in discovering an analogous factor in the etiology of mottled enamel.

UNLAKED BLOOD FOR CHEMICAL ANALYSIS

One of the characteristics of modern medicine is the success with which sciences not primarily biologic have been employed in the expansion of the knowledge of disease and in the increase in facility and accuracy of diagnosis. Both chemistry and physics play an important part in current medical thought and practice. Internal medicine, especially, has appropriated the device of blood analysis and has profited immensely by so doing. The rationale of the use of such analytic chemical data is based on the conception of the blood as the primary transporting system of the body carrying not only nutrients to the cells but, what is more significant from the diagnostic point of view, removing waste products from the site of formation to the excretory organs. An abnormal concentration of metabolites can thus be attributed to excessive production or to defective elimination. In general, the determination for the constituent in question has been carried out on the protein-free filtrate from laked whole blood.

That such procedure is theoretically justified has recently been questioned by Folin and Svedberg,¹ who point out that, practically, the inclusion of the contents of the red blood corpuscles in the material to be analyzed leads to difficulties of analysis and, as a consequence, to obscure and misleading results. On the basis of a large number of comparative analyses on laked blood, unlaked blood and plasma, these investigators have come to the further conclusion that many of the accepted statements concerning the partition of soluble constituents between corpuscles and plasma are untenable. It was shown, for example, that the ratio of content in corpuscles to that in plasma for sugar is 60:100, for urea 80:100, and for uric acid 22:100. It was also observed that amino-acid nitrogen is much more abundant in the plasma than in the unlaked corpuscles, a fact not in harmony with previously published results.

The enormous number of analyses of blood carried out as part of the usual hospital laboratory routine together with the great reliance placed on the results, render the searching evaluation of the methods employed of huge importance. It is pointed out by the Harvard

¹ Folin Otto and Svedberg Andrea J Biol Chem 88 715 (Oct) 1930

investigators that, whereas with laked whole blood the contents of the red cell are known to interfere with certain of the determinations and consequently to affect the results, through the use of unlaked blood such disturbances are eliminated. For instance, with laked blood the partition of the nonprotein nitrogen always resulted in a fraction of unidentified composition usually called "undetermined", with unlaked blood, the sum of the nitrogen from urea, uric acid, creatinine and amino-acids equals the total nonprotein nitrogen. When the contents of the corpuscles are analyzed with the plasma for sugar, the values for the fermentable material and the reducing substance do not coincide, when unlaked blood is used, the nonfermentable, reducing component of the cells is eliminated and the two methods for determining sugar yield similar results.

As usually happens when improved methods are devised, not only must previous conceptions be revised but it is necessary to supplant analytic data already existing. Furthermore, it might be expected that the diagnostic value of the improved methods would be enhanced, in fact, the authors state on the basis of their experience that "unlaked blood cannot fail to be more useful than laked blood in clinical applications of blood analysis."

Current Comment

BOTULISM AND HOME CANNING

Again attention must be directed to an outbreak of botulism from home canned vegetables, presumably canned by the so-called cold pack process. In this, the first outbreak to be recorded for 1931, the causative food epidemiologically was a salad made up from two glass jars of a mixture of home canned string beans, peas and carrots. The outbreak occurred in Grafton, N. D. following a party given on the night of January 29. Seventeen persons attended the party, twelve are dead, probably all who showed symptoms of botulism. Heretofore, home canned string beans have caused outbreaks of botulism in excess of any other food. Home canned string beans, even when mixed with carrots and peas, canned by the cold pack process, are a potential menace to the health. They should always be boiled before being served. Departments of home economics in agricultural colleges, universities and their extension divisions throughout the country should plan a vigorous educational campaign to prevent these deaths. Unfortunately many of the recipes for the home canning of vegetables antedate the present-day knowledge of botulism and with few exceptions no effort has been made to correct them. Admittedly it is difficult to reach those who are endangered by foods inadequately preserved in the home. Nevertheless the public should be told with unrelenting insistence that string beans and every nonacid vegetable may be rendered safe by sterilization for a sufficient time and temperature in a pressure cooker, by drying or by the

addition of a 10 per cent brine solution to the cold pack method. Enough information is now available to enable authorities to formulate definite rules to guide the home canner. Most of these facts were fully brought out in the original report of the California Botulism Commission.¹

THE HOSPITAL AND THE PATIENT

Social service is an important feature of the modern hospital. Patients may need something more than patience in the sometimes slow operations of the laws of the natural and physical sciences under the guidance of an enlightened physician or a talented surgeon. In an address before the American Association of Hospital Social Workers, a sympathetic critic² recently pointed out that amid the medical revolutions of the past centuries with their increasing mass of scientific knowledge the traditional meaning of the word hospital has been largely forgotten. It meant a place of hospitality for those in need of shelter and maintenance, and it was called a "hospital" because those sheltered there were considered, in the Latin, to be *hospes*, or guests. The spirit that makes a patient a guest and the hospital his host should be deeply inculcated. The patient is not merely a "scientific phenomenon" that demands time-consuming attention from a physician, but also a social being. Enlightened social service can do much to 'make a hospital a place of hospitality, to insist upon the point of view that the ill human being in hospital is a guest, and not merely a patient."

Association News

ABSTRACT OF MINUTES OF MEETING OF BOARD OF TRUSTEES HELD IN CHICAGO, FEB 19 AND 20, 1931

The Board of Trustees met in Chicago on Thursday and Friday, Feb 19 and 20, 1931.

REPRESENTATIVE TO NATIONAL CONFERENCE ON NOMENCLATURE OF DISEASE

Dr. Adrian Lambert of New York was appointed to represent the Association at the National Conference on Nomenclature of Disease.

REQUESTS FOR CONTRIBUTION TOWARD EXPENSES OF THE MEETINGS OF OTHER ORGANIZATIONS

The Board declined to make appropriations toward the expenses of meetings of other organizations, in the belief that this is not the province of the Association.

REQUEST FOR INFORMATION AS TO PLACING OF FUNDS AVAILABLE FOR THE PURPOSE OF RENDERING ASSISTANCE TO HOSPITALS AND FOR THE ADVANCEMENT OF MEDICAL SCIENCE IN GENERAL

A request for information as to the placing of funds available for the purpose of rendering assistance to hospitals and for the advancement of medical science in general was given consideration. The Board signified its eagerness to cooperate in any undertaking of this nature for the general promotion of medicine and suggested that such funds be used for the improvement of hospitals in general through the American Medical Association rather than for improvement in specific practice.

¹ Center, J. C., Dick, J. F. C. and Meyer, R. I. Ind. 12-11
Lal. 1-10-11
² See H. A. A. F. Social Service, Ind. 1-10-11
Social Service 2-1-11

REPRESENTATIVE TO MEETING OF BRITISH MEDICAL ASSOCIATION

Dr William S O'Neill Sherman of Pittsburgh was named to represent the Association at the meeting of the British Medical Association, to be held in Eastbourne, July 21-24

APPOINTMENT OF THIRD MEMBER OF COMMITTEE ON MOTION PICTURES

Dr Arno B Luckhardt was elected as the third member of the Committee on Motion Pictures. The personnel of this committee therefore is Dr Charles P Emerson of Indianapolis (chairman), Dr Carl Henry Davis of Milwaukee and Dr Arno B Luckhardt of Chicago

APPLICATION OF SERVICES OF DR W MCLELL MARRIOTT ON COUNCIL ON PHARMACY AND CHEMISTRY

The Board expressed its appreciation of the splendid service rendered by Dr Marriott on the Council on Pharmacy and Chemistry, and its regret that he felt constrained to resign

ELECTIONS

Nominations to fill vacancies on the editorial boards of the special journals on councils and on committees were considered, and the following appointments were made:

Drs Oscar M Schloss, E W Taylor, Dean Lewis, William Allen Pusey, John Herbert White, George L Shambaugh and James Ewing were elected to succeed themselves on the editorial boards of the *American Journal of Diseases of Children*, *Archives of Neurology and Psychiatry*, *Archives of Surgery*, *Archives of Dermatology and Syphilology*, *Archives of Ophthalmology*, *Archives of Otolaryngology* and *Archives of Pathology*, respectively

Dr J H Means of Boston was selected to succeed Dr George Dock on the editorial board of the *Archives of Internal Medicine*, and Dr Wilder Penfield of Montreal, Canada, was elected as a contributing editor on the editorial board of the *Archives of Neurology and Psychiatry*

Drs L B Mendel, L G Rowntree and Torald Sollmann were named to succeed themselves, and Dr Stanhope Brune Jones was appointed to succeed Dr W McKim Marriott (resigned), on the Council on Pharmacy and Chemistry

Dr Frederick J Genslen of Milwaukee was elected to succeed Dr Richard B Dillehunt (resigned) on the Council on Physical Therapy

Dr Ludwig Hektoen was appointed to succeed himself on the Committee on Scientific Research

REQUEST THAT THE ASSOCIATION SPONSOR AND DIRECT AMERICAN MEDICAL ASSOCIATION OF VIENNA

A request that the American Medical Association assume directorship and sponsorship over the American Medical Association of Vienna was refused, since it would not be possible, under the terms of the charter or under the provision of the Constitution and By Laws, for the American Medical Association to comply with the request

DECISION IN BRINKLEY BROADCASTING CASE

A record was made of the decision of the Court of Appeals of the District of Columbia affirming the decision of the Federal Radio Commission denying the Brinkley-Jones Hospital Association's application for renewal of its station license

REPRESENTATIVE TO SERVE ON SECTIONAL COMMITTEE OF AMERICAN STANDARDS ASSOCIATION

As one of the cooperating organizations that prepared the original standard on lighting of school buildings the Association has been asked to appoint a representative to serve on the Sectional Committee of the American Standards Association which will undertake a revision of that standard. The Board appointed as its representatives the Joint Committee of the American Medical Association and the National Education Association which has previously dealt with matters of this kind

BUREAU OF ECONOMICS

Tentative plans were adopted for the establishment in the near future of a Bureau of Economics

DISAPPROVAL OF REGISTRATION

Disapproval was expressed of bills S 5922 and S 5923 introduced by Senator Brookhart. The former is an effort to effect compromise and to prosecute criminals with the possibility of fine and imprisonment every physician or any one else violates the law with respect to the traffic in narcotic drugs, the latter makes it unlawful for a physician or surgeon to administer or prescribe narcotic drugs without information of the patient of his intention and conforming with various other restrictions that, if they are to be imposed at all, lie generally within the jurisdiction of the several states

MISCELLANEOUS

Appropriations were made to carry on the work of the various departments, councils and bureaus, as well as for the Committee on the Protection of Medical Research and the committees on scientific and therapeutic research

THE PHILADELPHIA SESSION

Headquarters Selected for Section on Obstetrics, Gynecology and Abdominal Surgery

The Section on Obstetrics, Gynecology and Abdominal Surgery of the American Medical Association will try the plan of designating a hotel as section headquarters for the Philadelphia meeting. The Hotel Walton has been selected for this purpose.

If you desire to stop at this hotel to facilitate meeting with other members of the section I kindly make reservation at once through Frederick S Bilde, Chairman of Committee on Hotel, Chamber of Commerce, Twelfth and Walnut streets, Philadelphia.

There is nothing obligatory about this plan as it is done solely with the idea of facilitating the association of members with others who have similar interests.

FRED L ADAIR, Chairman.

CONTRIBUTIONS FOR MEDICAL SALON IN PERSHING HALL

The sum contributed this week for the Pershing Memorial in Paris brings the total to \$2124.60. A list of those who have contributed during the current week follows:

Nelle S Noble MD Des Moines	May E Walker MD Piedmont
John F Haggerty MD Newark	Frank G Sanders MD, Fort Worth Texas
Frederick J Hierer MD, Cape May	Archib Crandell Greystone Park
Ramon A Aios MD Naguabo	M M Houcman MD New York
I R Woodward MD West Chester	J A Chittard MD Baltimore
Kalamazoo Academy of Medicine	Bertram M Bernheim MD Baltimore
Kalamazoo Mich	Carl B Herrmann MD Chicago
I C Spitzer MD East St Louis Ill	Samuel T Levethan MD New York
B P Levegood MD Bellwood	C I Swett MD, Wyncottkill
Robert H Ivy, MD Philadelphia	Frank L Culbert MD, North Stratford, N H

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts at 10 a m on Monday, 10 45 on Tuesday, 9 15 on Thursday and 10 30 on Saturday, over Station WBBM (770 kilocycles or 389.4 meters)

The program for the week is as follows:

March 9	Mental Hygiene for Middle Life
March 10	That Indefinite Term Indigestion
March 12	That Important Preschool Period
March 14	The Proposed Home for One Legged Canary Birds

Five minute health talks may be heard over the Columbia Broadcasting System daily except Sundays and holidays from 12 to 12 05 p m, Central Standard Time

The program for the week is as follows:

March 9	The Chinese Wall
March 10	How the Body Works—Respiration
March 11	How the Body Works—Circulation
March 12	The Body's Street Cleaning Department
March 13	Life's Most Vital Fluid
March 14	Training the Senses

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARIZONA

Bills Introduced—S 69 proposes to authorize the state treasurer to receive and disburse money given or provided to the state board of health by any person or agency, to enable the state board of health to engage in health demonstration work S 75 proposes to require every physician, surgeon, nurse or hospital attendant called on to treat any person for gunshot wounds, knife wounds or other material injuries that may have resulted from a fight, robbery or other unlawful act to notify immediately certain police authorities S 76, to amend the law with respect to the membership and functions of the state board of health, proposes to provide that the state board of health consist of the governor, the attorney general, the superintendent of public health and two resident practicing physicians, who shall be appointed by the governor from a list of five physicians presented by the Arizona State Medical Association

ARKANSAS

Bills Introduced—S 374 proposes to allow physicians to prescribe intoxicating liquor under the same general restrictions that appear in the Volstead Act S 399 proposes to regulate the practice of barbering

CALIFORNIA

Dr Porter Appointed State Health Officer—Dr Giles S Porter Los Angeles, was recently appointed state health officer and assumed his duties, January 29 Dr Porter has been assistant health officer of Los Angeles for many years He succeeds Dr Walter M Dickie, who has held the position since August, 1920 Dr Porter graduated from the Chicago Homeopathic Medical College in 1900

Bills Introduced—S 175 proposes to create the office of commissioner of medical and hospital service companies and to regulate and to provide for the supervision and licensing of medical and hospital service companies Such companies, apparently, are to be authorized to contract with individuals, families employees, associations, societies or employers to furnish medical, surgical or other form of treatment for sickness or injury, but they are to provide such treatment only through regularly licensed hospitals or institutions and only by persons regularly licensed to render such services S 358, to amend the narcotic drug act, proposes to provide that in any prosecution of a physician for a violation of the act, proof that the physician received, or had in his possession at any time, a greater amount of narcotic drugs than the record required by the act accounts for, shall constitute prima facie evidence of guilt A 1148 proposes to create a narcotic control board, which may establish such rules and regulations as it deems necessary to carry out adequately the enforcement of the act A 1147 proposes to establish a state narcotic hospital for the confinement, care, cure and rehabilitation of drug addicts A 1143 proposes to establish two institutions for the confinement treatment and rehabilitation of habit-forming drug addicts S 730 proposes to create a board of examiners for Christian healing and to regulate the practice of Christian healing The proposed license would permit the practice of Christian healing by prayer and anointment and imposition of hands S 463 proposes that after July 1 1931 all applicants for physicians and surgeons certificates shall in addition to present educational requirements present evidence of not less than one year's training in a hospital approved by the medical examining board

CONNECTICUT

Bills Introduced—S 127 to amend the law requiring hospitals to be licensed by the state department of health proposes to require the licensing of all hospitals except hospitals wholly supported by the state The present law exempts hospitals wholly or partly supported by the state hospitals for the insane, private tuberculosis sanatoriums receiving state aid and maternity hospitals H 303 to amend the law authorizing boards of education to require every child to be vaccinated before being permitted to attend a public school proposes to provide that if

the parents of any child conscientiously object to vaccination, their child may be admitted to school on the presentation of a conscientious exemption certificate S 213, to amend the medical practice act, proposes to provide that the provisions of the medical practice act shall not apply to licensed osteopaths, chiropractors or naturopaths H 984 proposes to provide that

Section 341 of the General Statutes does not apply to any one of the Jewish faith" Section 341 relates to the issuance of death certificates and provides that when death has occurred from certain communicable diseases no person other than a licensed embalmer shall have charge of the body H 415 proposes that each person detained in a state or private institution for the mentally deficient shall be examined at least once each year under the direction of the state department of health S 496 seeks to allow the medical, eclectic and homeopathic examining boards to issue, without examination limited certificates authorizing registration to practice medicine in specified hospitals "or other institutions" to persons who have creditably completed the required course of study in a legal and reputable medical college H 655 proposes to provide that all public health activities shall be under the state department of health H 875 proposes to restore to Isidor Yochelman of Boston, formerly of Bridgeport, the right to practice medicine H 897 proposes to provide that any physician who shall demand and receive an excessive fee for professional services shall be fined not more than \$100 H 901 proposes to abolish the office of coroner H 981 proposes that any person who is a duly licensed pharmacist in any other state may be licensed to practice pharmacy in Connecticut in accordance with such rules and regulations as may be prescribed by the pharmacy commission H 978, to amend the medical practice act, proposes to require all practitioners of the healing art to register annually, but does not require an annual fee

DELAWARE

Bill Introduced—H 169, to amend the workmen's compensation act, proposes, among other things, that the cost of such surgical, medical and hospital services as the condition of the injured employee requires shall not exceed \$150

GEORGIA

Health Units Established in Drought Area—Dr Thomas F Abercrombie, state commissioner of health, recently announced that three full time health units would be established in Georgia through drought relief funds of the federal government The work will be under the supervision of Dr Millard E Winchester, director of county health work state board of health The unit in health district number 1 composed of DeKalb, Wilkes and Chattooga counties, will supplement the work of the full time health unit that has been functioning for several years in Wilkes County, headquarters will be at LaFayette A unit in health district number 2 composed of Catoosa, Whitfield, Murray and Gordon counties will supplement the work of the full time nurse maintained by Whitfield County, with headquarters at Dalton One mobile field unit will act as a flying squadron and will be dispatched to all parts of the state where there is no organized health work it will have its headquarters at Atlanta Two sanitary engineers are being added to the staff of the state board of health for general work over the state The amount to be expended in Georgia by the federal authorities has been estimated at between \$30,000 and \$35,000

ILLINOIS

Bills Introduced—H 293 proposes to exempt practicing nurses registered under the provisions of the Illinois Nursing Act from jury service H 301 proposes to make it unlawful to sell any preparation containing wood alcohol methanol or methyl alcohol unless the container in addition to being labeled as now required by law contains the following statement in letters not less than one eighth inch in height Warning Wood alcohol (methanol or methyl alcohol) is extremely poisonous and may cause blindness or death if it enter the body through the mouth, by skin absorption or by inhalation of vapors H 311 proposes to provide that in case of any death occurring without medical attendance it shall be the duty of the undertaker to notify the coroner of the death and the coroner shall then make an investigation as to the cause of death

Personal—Dr Roy O Hawthorne Monticello has been appointed managing officer of the Kantake State Hospital to succeed the late Dr George S Edmondson —Dr William Thomas McLenn Maroa was the guest of honor at the meeting of the Decatur Medical Society February 17 in celebration of

his completion of fifty years in the practice of medicine. His son Dr. Franklin C. McLean, director of clinics and professor of medicine, University of Chicago, was the principal speaker and reviewed medical progress during the past fifty years. — Dr. Ott L. Pelton has retired after fifty-eight years in the active practice of medicine in and near Elgin.

Chicago

Serum Center Established—A department to be known as the Samuel Deutsch Convalescent Human Serum Center has been established at Michael Reese Hospital with funds provided by the children of Mr. Deutsch. It will supply special human serum to the Chicago district for the treatment of various infectious or contagious diseases and especially for the treatment of infantile paralysis. It is said to be the first serum center to be established in the state. The comparative figures for the number of cases of infantile paralysis in Illinois were 410 in 1930 against 88 in 1929. The serums are to be obtained only from patients who have recovered from various diseases and whose serum has been shown to prevent disease in patients who have been exposed to similar infection. Cooperating with the new serum center the Illinois State Board of Health will distribute convalescent serum. Drs. Sidney O. Lewinson and Leo Zimmermann are assisting in this work.

Lectures by Professor von Groer—Dr. Franz von Groer, director of the pediatrics department, University of Lemberg, Poland, who is the Theodore B. Sachs visiting professor at the University of Illinois College of Medicine, has been lecturing at the university since February 14 and will continue until March 14. Among others he addressed a joint meeting of the Chicago Tuberculosis Society and the Chicago Medical Society, February 25 on "Diagnosis, Prognosis and Treatment of Tuberculosis in Childhood." He delivered an afternoon lecture on the same day under the joint auspices of the Institute of Medicine of Chicago and the University of Illinois Department of Experimental Medicine on "The Esophagetic Importance of the Wheel and Its Relation to Immunity and Hygiene." The Theodore B. Sachs Memorial Fellowship has been established at the University of Illinois College of Medicine through a grant from the Chicago Tuberculosis Society.

INDIANA

Bills Introduced—H. 522 proposes to make it unlawful for any person to possess any opium, coca leaves, cannabis indica, or cannabis sativa, loco weed or any salt or derivative of any of them, except for strictly medical purposes. H. 480 proposes that it shall be unlawful for any city of 200,000 or more to locate or maintain any hospital for the treatment of infectious or contagious diseases within 1,500 feet of any public or private hospital now erected or in the course of erection. S. 284 proposes to authorize the appointment of county, city and district health commissioners.

IOWA

Dinner to Dr. Biering—Dr. Walter Lawrence Biering, Des Moines, for many years secretary of the Federation of Medical Boards of the United States, is to be the guest of honor at a dinner given by the Des Moines Medical Library Club, March 7. Dr. Biering is a past president of the Iowa State Medical Society and of the Iowa State Board of Health; he was for several years a member of the faculty of the State University of Iowa College of Medicine and later of Drake University. In 1921 he was made an honorary member of the Royal College of Physicians of Edinburgh in recognition of services in connection with reciprocity in medical education and licensure between Great Britain and the United States.

KANSAS

Bills Introduced—S. 340 and H. 577 to amend the medical practice act propose that persons holding certificates of the National Board of Medical Examiners may, at the discretion of the board, be granted licenses to practice medicine, without examination. S. 341, to amend the medical practice act proposes that the fee for reciprocal registration shall be fixed by the board but shall not be less than \$25, and if a certificate on reciprocal registration is denied, \$10 of the fee shall be retained by the board. S. 342 proposes to create a board of physiotherapy examination and registration and to regulate the practice of physiotherapy, defined as the use of natural forces in the treatment of disease. Apparently no exception is made in favor of licensed physicians. H. 582 proposes to authorize certain rural high school boards to employ a registered nurse.

MARYLAND

Bills Introduced—S. 102 to amend the dental practice act proposes to provide (1) that no person shall practice dentistry under any name except his proper name, (2) that it shall be unlawful to use the name of any company, association, corporation, trade name or business name in connection with the practice of dentistry and (3) that any one who shall act or be himself out as manager, proprietor, operator or conductor of a place for performing any dental operation or service pertaining to the human teeth, jaws or mouth shall be deemed to be practicing dentistry. H. 149, to amend the pharmacy practice act, provides that nothing in the act shall be so construed as to make unlawful the sale or display by general merchant of any proprietary or patent medicines or the sale by general merchants of commonly used household or domestic remedies, in original unopened packages, provided that such household or domestic remedies are clearly labeled with the ordinary name of the article contained therein and the name of the manufacturer or distributor thereof. H. 150 to amend the pharmacy practice act, proposes to discontinue the registration of assistant pharmacists. H. 168 proposes to provide for exempting the building, equipment and furniture of hospitals, asylums and other charitable and benevolent institutions from the payment of any assessments for the opening, grading and paving of any road or street.

MASSACHUSETTS

Speech Clinic Licensed—It is reported that the state department of health has licensed "The Medical Speech Clinic" in Boston, of which Dr. Walter B. Swift is director. The clinic which gives free treatment in cases of speech defect, is believed to be the first speech clinic in the United States to have a state license.

Bills Introduced—H. 494 proposes to accord liens to hospitals treating persons injured in accidents, on any settlements or judgments obtained by the injured persons by reason of the injuries. H. 595 to amend the pharmacy practice act, proposes to allow the sale of proprietary medicines, under the supervision of the board of pharmacy, by stores not less than a mile from a registered drug store.

Society News—The Southbridge District Medical Society was organized, January 7. Dr. Joseph G. E. Page was elected president. Dr. George Webster, vice president and Dr. Theodore L. Story, secretary. —Dr. DeWitt G. Wilcox addressed the New England Physical Therapy Society, February 18, in Boston on diathermy in gynecology and Dr. Benedict F. Boland on ionization of the cervix uteri by high frequency currents. —Dr. Joseph C. Aub, Boston, addressed the Harvard Medical Society, Boston, February 10 on "The Relation of Calcium Metabolism to Internal Medicine." —Dr. Augustus Riley, Boston, addressed the Belmont Medical Society, February 27, on "Value of Pyclograms as an Aid in Diagnosis."

MINNESOTA

Bill Introduced—H. 683 proposes to forbid the sale or serving of lunches or meals in rooms in which drugs are sold.

Society News—Dr. Chas. Ray Murray, New York, addressed the Minneapolis Surgical Society, February 4, on delay and nonunion of fractures. —Dr. Horace Newhart, Minneapolis, spoke on diseases of the mastoid before the Rice County Medical Society, Faribault, February 3. —Dr. James B. Carey, Minneapolis, discussed gastro-intestinal lesions at the Washington County Medical Society, Stillwater, January 13.

MISSOURI

Health at St. Louis—Telegraphic reports to the U. S. Department of Commerce from eighty-one cities with a total population of 36 million for the week ended February 14, indicate that the highest mortality rate (241) was for St. Louis, and that the mortality rate for the group of cities was 14. The mortality rate for St. Louis for the corresponding week last year was 168 and for the group of cities 134. The annual rate for eighty-one cities for the seven weeks of 1931 was 142 as against a rate of 132 for the corresponding weeks of 1930. Caution should be used in the interpretation of weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population, may tend to increase the death rate.

Society News—Dr. Emmett P. North, St. Louis, was elected president of the Medical Association of the Missouri Pacific Lines at its second annual meeting, St. Louis, January 30-31 and Dr. Henry J. Scherck, St. Louis, secretary. —Drs.

Caryl R. Ferris and Frederick C. Narr, Kansas City, among others, addressed the Jackson County Medical Society, February 24, on "Periarthritis Nodosa."

Bills Introduced—H 383 to amend the dental practice act, proposes to provide after 1935 for the appointment by the governor annually on October 16 of one member of the Missouri dental board, whose term shall be five years. Under the present law the terms of all members expire at the same time. H 390 proposes that one of the members of the state board of health shall be a dentist. H 447, to amend the dental practice act, proposes to require the board of dental examiners to mail to every registered dentist, on or before September 30 of each year, a notice of the expiration of his or her license, and on the first of March to publish and mail to every registered dentist a printed list of the legally registered dentists. H 459 makes it a misdemeanor to go 'from house to house or upon the streets and highways soliciting an opportunity to treat the sick or fit eyeglasses.' S 308 proposes to repeal the workmen's compensation act. H 462 proposes to authorize the board of pharmacy to license as a pharmacist, without examination, any graduate of a reputable medical college who has had twenty years of medical practice, has dispensed his own prescriptions, and is at least 45 years old.

NEBRASKA

Bills Introduced—S 99 proposes to provide for the appointment of women physicians for the care and supervision of the women insane in state hospitals. S 203 proposes to amend the workmen's compensation act by providing compensation for disablement by occupational diseases. Such occupational diseases to be compensable, must be contracted by exposure in connection with employment and manifest themselves within three months after the termination of the exposure. S 202 to amend the workmen's compensation act, defines the terms "injury" and "personal injuries" to mean "only violence to the physical structure of the body and such disease and infection as naturally results therefrom. The said terms shall in no case be construed to include any contagious or infectious disease contracted during the course of employment or death due to natural causes." Such a definition inferentially, makes some occupational diseases compensable. S 217 to amend the workmen's compensation act authorizes the compensation commissioner to establish a schedule of medical, surgical and hospital fees, and further proposes that an employer shall not be liable for compensation during the period an injured employee refuses to avail himself of medical or surgical treatment furnished by the employer. S 362, to amend the pharmacy practice act proposes that for the purpose of the act 'drugs and medicines shall include all poisonous, dangerous or deleterious substances and preparations, for external or internal use recognized in the United States Pharmacopeia or National Formulary which are intended for the correction, mitigation or prevention of diseases of either man or animals, or any other poisonous dangerous or deleterious substances and preparations intended for a similar purpose, except patent or proprietary medicines.'

NEVADA

Bill Introduced—A 90 proposes a new act to regulate the possession, control, dispensing sale, prescribing and other traffic in opium or coca leaves, or any compound manufacture salt derivative or preparation thereof.

NEW JERSEY

Personal—Drs. Oliver R. Blanchard and Louis Franklin co-founders of the Fairmount Surgical Sanatorium, Jersey City, were given a testimonial dinner in New York, February 19 by colleagues and members of the staff. The occasion marked the twentieth anniversary of the founding of the institution.

Bills Introduced—A 207 proposes to create a board of naturopaths and to regulate the practice of naturopathy. Naturopathy is defined as that system of the healing art which uses and prescribes the use of the combined psychological, mechanical and material sciences of healing as taught in schools, institutes and colleges of naturopathy which shall include psychotherapy, mechanotherapy, hydrotherapy, electrotherapy, pneumotherapy, neopneumotherapy, physiotherapy, chromotherapy, corrective and orthopedic gymnastics, spondylotherapy, geotherapy, dietetics, biochemistry, phytotherapy and external applications. A 264 to amend the medical practice act proposes to make it mandatory for the state board of medical examiners to license without examination ex-convict men who were residents of

New Jersey on enlistment, but who have subsequently been licensed to practice medicine in other states. A 370 proposes to regulate the occupation of barbers and would authorize such practitioners to 'remove superfluous hair, warts, moles and other blemishes from the scalp, face, neck or upper part of the body.' A 313 to amend the dental practice act provides that any person duly licensed to practice dentistry in another state who has so practiced for at least three years and who has been a resident of New Jersey for ten years may be licensed without examination in New Jersey. A 349 proposes to add a chiropractor to the state board of medical examiners. S 170 proposes to make it unlawful to sell any food, drink, medicine or toilet preparation intended for human use or any antifreeze agent for motor vehicle radiators which contains wood alcohol, methanol or methyl alcohol. Sales for other purposes may be made only in containers labeled 'poison.' A 205, to amend the osteopathic practice act, proposes, among other things, (1) to authorize the issuance of licenses to osteopaths to practice major surgery, and to permit all licensed osteopaths to practice minor surgery and obstetrics without restriction, and (2) to require that reports and certificates pertaining to the public health, made by osteopaths, be accepted by the department to which they are made, as having the same force and effect as those issued by nonsectarian physicians. Licensed osteopaths may be examined for licenses to practice major operative surgery on showing (a) two years' internship in an approved osteopathic or medical hospital or (b) a two years postgraduate course in surgery in a reputable college of osteopathy or medicine, or (c) at least three years of actual practice in major surgery.

NEW YORK

Trichinosis Outbreak Reported—Fifteen cases of trichinosis were recently reported at Williamsport. Although eight or the fifteen persons affected were confined to hospitals, no deaths had been reported up to February 7. According to the U. S. Department of Agriculture the outbreak was traced to the eating of raw or improperly cooked pork infested with trichinae.

Personal—Dr. Elizabeth B. Thelberg, resident physician at Vassar College, Poughkeepsie, recently retired after a service of forty-three years. Dr. Thelberg was for many years chairman of public health in the American Council of Women and more recently chairman of public health in the International Council of Women. She is a director of the American Women's Hospitals and has been decorated by France and Serbia for her work in connection with this organization which maintains hospitals and clinics for the destitute in various foreign countries supported by voluntary contributions. —Dr. Hugh S. Gregory, who has been connected with the Binghamton State Hospital for twelve years, has been appointed superintendent of Newark State School for Mental Defectives to succeed Dr. Harry A. Steckel.

Bills Introduced—S 837 and A 1158 propose to authorize the commissioner of health to establish and maintain tuberculosis hospitals in each sanitary district. S 769 and A 1066 propose to authorize the establishment of the Marcus division of the Utica State Hospital as a separate institution within the department of mental hygiene to be known as the Marcus State Hospital. A 1187 proposes to require asylums and hospitals in cities, villages, towns and fire districts having a central fire alarm station to be equipped with fire alarm boxes. A 1218 proposes to regulate the practice of barbering. A 1277 and S 915 to amend the medical practice act propose to provide that a license to practice osteopathy shall not entitle the holder thereof to perform any surgical operation involving incision for the opening of a natural body cavity for the removal of cancer for the amputation of an extremity or an appendix or for the removal of any gland or organ or part thereof of the human body. The present law does not permit osteopaths to administer drugs or perform surgery with the use of instruments.

New York City

Outbreak of Psittacosis—A shipment of six parrots which arrived in New York from Cuba Dec. 31, 1930, is blamed for an outbreak of psittacosis affecting five members of a family in Brooklyn. One person died January 18 of bronchial pneumonia. Psittacosis was suspected after four others became ill and after it was learned that they had been in contact with a parrot in the house in which the man died. New paper report, February 12, indicated that the disease was under control. All the birds were traced, two having been consigned to the family that developed psittacosis. The ban imposed by the U. S. Public

Health Service on the importation of parrots was lifted in October 1930. No change will be made in the restrictions if no further outbreaks occur, officials stated.

NORTH CAROLINA

Bill Introduced—H 294 proposes to require the annual registration of chiropractors and the payment of an annual fee of \$10.

Hospital News—The Lowrance Hospital was recently opened at Mooresville. It was erected at a cost of \$125,000, of which \$10,000 was donated by the Duke Hospital Foundation.

Personal—Dr. William I. Hill, Albemarle, has been appointed full time health officer for Stanly County. Dr. Zebulon A. Moschley, Kinston, has been appointed full time health officer of Lenoir County.

NORTH DAKOTA

Bill Introduced—H 259 proposes to make it unlawful to sell any food drink, medicine or toilet preparation or any anti-freeze agent for motor vehicle radiators containing wood alcohol or methyl alcohol. Sales for other purposes may be made only in containers labeled "poison."

OREGON

Bills Introduced—H 259 proposes a new pharmacy practice act. This bill apparently would prohibit licensed physicians and surgeons from dispensing or administering drugs and medicines except in an emergency. H 346 proposes to authorize the establishment of county boards of health to consist of one member of the county court, the county school superintendent, the mayor of the largest city of the county and one licensed physician. S 173 to amend the narcotic drug act proposes among other things that wherever the words "narcotic drugs" are used in the act they shall mean opium, morphine, codeine, cocaine, heroin, or any other of their salts or derivatives. Cannabis indica shall mean cannabis indica, cannabis sativa, Indian hemp, hashish or marihuana.

PENNSYLVANIA

Bills Introduced—S 117 proposes to authorize the county commissioners of any county and the corporate authorities of any borough located within such county to erect joint county and borough buildings to be used for hospital purposes. S 123 proposes that the children's society in each county may, without first obtaining the consent of any parent or guardian, legally assume responsibility for such emergency surgical operations as are pronounced necessary by attending physicians and surgeons for the health and comfort of children who are wards of the Children's Aid Society. H 580, to amend the workmen's compensation act, proposes to eliminate the statutory definition of hernia which describes it as ordinarily a physical weakness or ailment which develops gradually, and to eliminate the provision that hernia shall not be compensable unless conclusive proof is offered that it was immediately precipitated by such sudden effort or severe strain that (1) the descent of the hernia immediately followed, (2) there was actual pain in the hernial regions and (3) the manifestations were of such severity that they were immediately noted by the workman and communicated to the employer within forty-eight hours of the accident. H 632 proposes to create a board of drugless therapy education, examination and licensure, to consist of two chiropractors, two naturopaths and one neuropath and to regulate the practice of drugless therapy. Drugless therapy is to include chiropractic, naturopathy and neuropathy and is defined as the prevention of disease and treatment of the sick by any movements, adjustments and manipulations, performed by the hands or by any instruments or appliances and the use of any physical forces, such as air, light, water, heat and electricity, or any of their derivations foregoing therapeutic measures the use of nontoxic herbs and plants and their derivations dispensed, administered or prescribed, and minor surgery as a first aid and emergency measure and as practiced and taught in the various schools of drugless therapy. Any nontoxic herb or plant or its derivations which can be metabolized or has a food value is to be considered as nontoxic. Applicants for licenses after Sept. 1, 1931 must have in addition to their cult studies, a high school education and one year's college work in chemistry, physics and biology.

Philadelphia

Dr. Keen Celebrates Ninety-Fourth Birthday—Dr. William W. Keen celebrated his ninety-fourth birthday, January 19.

Dr. Keen received his M.D. degree from Jefferson Medical College in 1862. He was President of the American Medical Association, 1900-1901. During his career Dr. Keen has been a member of practically every important surgical organization and president of many. He has held many teaching positions and is the author of numerous publications.

Society News—Dr. Harry E. Knox, among others, addressed the Philadelphia Pediatric Society, February 10, on "Duodenal Veils in Infancy." Dr. Charles Francis Leake gave a card specimen of "Congenital Pulmonic Stenosis and Unusual Extracardiac Findings" at the February 12 meeting of the Pathological Society of Philadelphia. Dr. Valenz H. Parler, New York, lectured at the Woman's Medical College of Pennsylvania, February 10, on "Syphilis as a Public Health Problem." Dr. Ellen C. Potter, Trenton, N. J., will lecture April 10, on "The White House Conference of Child Health and Protection," and Dr. Mary R. Noble, Harrisburg, April 10, Pennsylvania Health Program for the Preschool Child.

RHODE ISLAND

Society News—The Providence Medical Association addressed, February 2, by Dr. John I. Pinkney on "Diagnosis of Early Pulmonary Tuberculosis in Childhood and Adolescence." Dr. Harry Lee Parnes discussed the condition in adults and Drs. Isaac Gerber and Emmanuel W. Benjamin, radiologic aspects. Dr. Vincent J. Ryan addressed the St. Joseph's Hospital Staff Association, Providence, February 12, on "Diagnosis and Treatment of Common Skin Lesions."

Bill Introduced—H 680 to amend the chiropractic practice act, proposes that any person at least 23 years of age, good moral character who shall before July 1, 1931, submit satisfactory evidence to the state board of chiropractic examiners that he practiced chiropractic in the state as his occupation for a period of seven years or more prior to July 1, 1927, may receive a certificate of exemption from examination and be recommended by the board of chiropractic examiners for a certificate of qualification to practice chiropractic.

SOUTH DAKOTA

Bills Introduced—H 239 proposes to prohibit physicians from charging more than 25 cents per mile for travel when engaged in professional services. H 254, to amend the chiropractic practice act, proposes (1) to define chiropractic as "the science of locating and correcting interferences with the transmission and expression, without the use of drugs or surgery, (2) to provide that chiropractors shall be subject to the same rules that govern physicians or healers of old schools as to births and deaths and the control of contagious diseases and (3) to grant them all the privileges accorded other physicians pertaining to the public health. H 178, to amend the nursing practice act, proposes to provide that a member of the board of nurse examiners may be connected with a training school for nurses.

TEXAS

Bill Introduced—H 453 proposes that the state board of health shall consist of nine members, six of whom shall be licensed physicians, one a dentist, one a pharmacist and one a sanitary engineer.

Society News—Dr. Witten B. Russ, San Antonio, elected president of the Texas Surgical Society at its fifteenth annual meeting in Greenville, February 23, succeeding Dr. Joseph D. Becton, Greenville. The 1932 meeting will be held in Houston. Dr. Sidney J. Wilson, among others, addressed a joint meeting of the Tarrant County Medical Society and Fort Worth Dental Society, January 6, on "Management of the Lower Lip Complicated by Mouth Infection."

UTAH

Bill Introduced—S 87, to amend the pharmacy practice act, proposes to raise the annual registration fees required of registered pharmacists to \$7 and of assistant pharmacists to \$3. Four dollars of each fee paid shall be for the use and benefit of the Utah Pharmaceutical Association and will entitle registrants to membership therein.

VERMONT

Bill Introduced—H 138 to amend the pharmacy practice act, proposes to raise from three to four years the period of apprenticeship or study required of applicants for licenses.

VIRGINIA

Personal—Dr Peter P. Crusey, Sedley, has resumed the duties of health officer of Southampton County, succeeding Dr Bathurst B. Bagby, who was recently promoted to director of the child health bureau of the state board of health, Richmond.

WASHINGTON

Bill Introduced—S 177 proposes to authorize the construction of an institution for the confinement, cure and rehabilitation of drug addicts. S 186, to amend the nursing practice act, proposes to provide (1) that all registered nurses shall reregister annually and pay an annual fee of \$1 (2) that all applicants for licenses as registered nurses must have had two years high school education, and (3) that only nurses who have had at least three years practical experience after graduation and who shall at the time of their appointments be actively engaged in the teaching or training of nurses shall be eligible for appointment as members of the examining committee.

WYOMING

Bills Introduced—S 78 proposes to increase from \$1 to \$2.50 the annual registration fee that licensed practitioners of medicine, surgery and osteopathy are required to pay to the board of medical examiners. S 60 proposes that the term of the board of examiners in optometry shall be four years.

GENERAL

Leprosy Association Formed—At the Leonard Wood Memorial Leprosy Conference held in Manila and Culion P. I., in January, the International Leprosy Association was formed with the following officers: Drs Victor G. Heiser, New York, president; Carlos Chagas, Brazil, and E. Muir, Calcutta, vice presidents; R. G. Cochrane, London, secretary; and Eli Edwin Brown, Manila, treasurer. Dr Herbert Windsor Wade, chief pathologist at the Culion leper colony and medical director of the Leonard Wood Memorial for the Eradication of Leprosy, will be editor of a quarterly journal of leprosy to be published by the association.

Annual Increase in Automobile Deaths—The National Safety Council reports that in thirty-three states and the District of Columbia, representing 75 per cent of the population 32,500 automobile deaths occurred during 1930, a 4 per cent increase over 1929. There was less than 1 per cent increase in motor vehicle registrations during the year. Ten states with strong drivers license laws showed an average decrease of 15 per cent. New Hampshire, Rhode Island, California, Connecticut, Maryland, Massachusetts, New Jersey, New York, Pennsylvania and Vermont. The states without standard drivers' license laws showed an increase of 83 per cent.

American Committee for Control of Rheumatism—The fourth meeting of the American Committee for the Control of Rheumatism was held, Dec 6, 1930, in Philadelphia. The need for state institutions for care of poor patients with chronic arthritis, the question of nomenclature for rheumatic disease and the value of sanatorium care and of climate were among the topics discussed. The committee plans to assemble information on the type of treatment offered by various prominent sanatoriums and the expense incident thereto and eventually to publish an annual review of progress in the study and treatment of rheumatic diseases. Members present were Drs Ralph Pemberton, Philadelphia, chairman; Robert B. Osgood, Boston; Joseph L. Miller, Chicago; Russell L. Cecil, New York; Russell L. Harden, Cleveland; and A. A. Fletcher, Toronto. Drs George R. Minot, Boston, and Philip S. Hench, Rochester, Minn., were elected to membership.

News of Epidemics—Schools were closed in Bowling Green, Ky., for two weeks beginning February 16 to combat an epidemic of scarlet fever. 500 cases having been reported in Warren County within a few weeks. Nine public schools and two private schools were affected. Epidemic meningitis is reported from Tennessee as follows: Memphis, twenty-one cases with thirteen deaths up to February 11; Knoxville, twelve cases with six deaths during January. Three cases occurred in Muhlenberg County, Ky., in January, with two deaths. Schools were closed in Marion, Ky., January 28 following the death of a high school student. New paper report smallpox at various points in the middle west. Thirty-five cases were reported, January 26 in Coal City, Ill., a town of about 1,000 persons. 250 school children were vaccinated at New Bremen, Ohio, after two became ill with the disease. In White Cloud, Mich., a town of about 600 persons, 101 cases were reported.

January 23, Grand Rapids, Mich., had nine cases. February 1, three cases at Pikeville, Ky., January 29, caused health officers to issue warning to citizens to be vaccinated.

American College of Physicians—The fifteenth annual clinical session of the American College of Physicians will be held in Baltimore, March 23-27, with an additional day in Washington, D. C. March 28. Symposia on gastro intestinal disease, heart disease, endocrine disorders, anemia and questions of public health, medical practice and medical economics are on the program in addition to general sessions devoted to varied topics. Special clinics and demonstrations at Johns Hopkins University School of Medicine, the University of Maryland School of Medicine and various Baltimore hospitals are to be given each afternoon of the meeting, from Tuesday to Friday, inclusive. Features of the Washington program are lectures at the U. S. Naval Medical School and at St. Elizabeth's Hospital, clinics and demonstrations at George Washington University School of Medicine, Georgetown University School of Medicine, Mt. Alto Hospital and Children's Hospital, demonstrations of arthritis and syphilis from the anthropological collections of the Smithsonian Institution and visits to Walter Reed General Hospital, the Army Medical Library and the Army Medical Museum. Among speakers who will present papers are Drs William S. Thayer, Warfield T. Longcope and Lewellys F. Barker, Baltimore; Henry A. Christian, George R. Minot and Frank H. Lihay, Boston; Ray M. Balveat, Oklahoma City; Cyrus C. Sturgis, Ann Arbor, Mich.; Gabriel Tucker, Philadelphia; George E. Tollansbee, Cleveland, and David P. Barr, St. Louis.

Medical Bills in Congress—S 255, the Jones maternity and infancy bill, amended to cover rural hygiene also, has passed the House. S 5959 has passed the House, authorizing the Secretary of the Treasury to purchase the state laboratory at Hamilton, Mont., constructed for the prevention, eradication and cure of spotted fever. S 6097 has passed the Senate, authorizing the construction and equipment of a hospital on Crow Indian Reservation, Montana. S 6171 has passed the House, regulating the prescribing and use of waters from the Hot Springs Reservation, Hot Springs, Ark. H. J. Res. 480 has passed the House, authorizing an appropriation to defray the expenses of participation by the United States in the Conference on the Limitation and Manufacture of Narcotic Drugs, to be held at Geneva, May 27. H. R. 6997 has been vetoed by the President, proposing to confer on certain persons who served in the quartermasters corps or under the jurisdiction of the Quartermaster General during the war with Spain the Philippine insurrection or the China relief expedition, the benefits of hospitalization and the privileges of the Soldiers' Home (H. Doc. 778). H. R. 12922 has passed the House providing for medals of honor and awards to government employees for distinguished service in science and for voluntary risk of life and health beyond the ordinary risks of duty. H. R. 17240, introduced by Representative Shott, West Virginia, and S 6227, introduced by Senator Copeland, New York, and Senator Hatfield, West Virginia, propose to provide for federal supervision and control, through federal subsidies of the activities of the several states in the physical rehabilitation, education, vocational guidance and vocational education of physically handicapped persons less than 21 years old.

FOREIGN

Medical Education in Russia—Medical education in the Union of Socialist Soviet Republics, which was reorganized in 1930, now has three divisions or faculties according to information furnished by the department of health, Moscow, through the American representative of the Russian Red Cross Societies. The faculties are (1) the curative prophylactic faculty, which is divided into surgical, therapeutic and stomatologic departments; (2) the sanitary prophylactic faculty, which is divided into epidemiologic, communal hygiene, nourishment and sanitary industrial department; and (3) the faculty for the protection of motherhood and childhood, which has two departments, one for mothers and infants, the other for children and adolescents. Except in the second division and the stomatologic department of the first medical instruction covers four years. After a year's internship graduate of the curative prophylactic faculty and of the faculty for the protection of motherhood and childhood have the right to practice medicine independently. Physicians who have received their medical training outside of Russia may practice only after they have completed a year of practical medical work in institutions controlled by the Commissariat of Health. Applicants must also pass examination on the principles of Soviet health protection.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Feb 7, 1931

Streptococcus Hemolyticus in Puerperal Fever and in the Throats of Attendants

An important report on the source of infection in puerperal fever, the result of researches by Dr John Smith of the City Laboratory, Aberdeen, has been issued by the Department of Health for Scotland. It is based on researches into the causation of 221 cases of puerperal fever and 25 cases of septic abortion occurring in Aberdeen over a period of eight years. Bacteriologic examinations were made of materials obtained from patients and from physicians, nurses and other attendants—in the last three classes chiefly nose and throat swabs. During this period all cases of puerperal fever admitted to the Aberdeen City Hospital for Infectious Diseases were submitted to routine bacteriologic investigation, with especial reference to the presence of *Streptococcus hemolyticus*. This organism was found associated with fatal cases of puerperal fever to an extent that left no doubt as to its importance. It was found in uterine cultures from 149 of the 221 cases, and in 120 cases it was present alone. It was found also in blood cultures in 22.9 per cent of the cases, while other organisms were found in only 3 per cent. Out of 46 fatal cases it was obtained from one or more sources in 43. In 25 cases of septic abortion it was obtained in pure culture from the uterus in 11 and in 3 other *Bacillus coli* was found. In 15 cases the only organism obtained from the uterus was *Streptococcus haemolyticus* and the source of infection was discovered in 12 of these. In 5 cases *B. coli* alone was obtained from uterine cultures and its source was discovered in each. In 12 cases the infecting strain of the streptococcus was found to originate in the throat or nose of the physician, nurse or student in attendance; in only one case was the infection of autogenous origin—from a septic focus in the patient's hand. In *B. coli* infections the organisms were derived from either the urinary tract or the intestine.

With regard to prophylaxis it is suggested that infection might be prevented if physicians, midwives and nurses used masks more frequently and adopted more careful antiseptic treatment of the hands. Further that in hospitals isolation of beds be introduced by means of glass screens interposed between the patients.

The Compulsory Insurance of Motorists and Hospital Staffs

In a previous letter it was reported that by the road traffic act motorists must insure against their liability for personal injuries to third parties and are liable to reimburse any hospital in which the injured person was treated up to a maximum of \$125. The Hospital Committee of the British Medical Association has therefore called the attention of the staffs of hospitals to the action to be taken in the new situation. The British Hospitals Association has been negotiating with insurance companies for a daily flat rate of payment where a claim under a third party policy has been established. The amount of the flat rate does not seem sufficient, but what the British Medical Association is mainly concerned with is that the interests of the medical staffs should not be overlooked. It suggests that the governing bodies of hospitals should be requested to make provision for the medical services rendered. The amount payable by the insurer is qualified by the definition that it shall be in terms of the daily cost per patient in hospital. This obviously provides for the cost of the medical attendance under special circumstances. It brings the service under the category for which the hospital policy of the association states that the cost of maintenance and medical treatment should be the sub-

ject of contribution to medical staff funds. The visiting medical staff should therefore insist that for all persons below the financial status of private patients an amount equal to one-fourth of the maintenance cost paid by the insurer to the hospital should be credited to the staff fund. When the injured third party is of the status of a private patient he should not be the subject of an application to the insurer but an account should be rendered to him as a private patient. The point is described by the association as an important one and it is declared to be desirable that a proper precedent should be established at the beginning.

International Congress of the History of Science

The second International Congress of the History of Science and Technology will be held in London at the Science Museum, South Kensington, from June 29 to July 3 under the presidency of the medical historian Dr Charles Singer. The committee originated with the Comité international d'histoire des sciences which was founded in 1928 and which meets annually in Paris and organizes a congress in the history of science every three years. In the coming congress this body, as well as the History of Science Society, New York, and the Newcomen Society for the Study of the History of Engineering will cooperate. The program will include visits to Kew Gardens (botanic), Docton House (Darwin's residence, now a museum of Darwin relics), Barber Surgeons' Hall and the Royal College of Physicians. Further particulars can be obtained from the secretary, Mr W. H. Dickinson, Science Museum, South Kensington, London, S. W. 7.

The Control of Proprietary Medicine

A bill emanating from the health advisory committee of the Socialist party, to be known as the proprietary medicines bill and intended to regulate the manufacture and sale of such preparations, is about to be brought forward. Its provisions are drastic and considerable opposition is already announced by manufacturers and pharmacists, but the provisions should with one exception receive approval from the medical profession. It is proposed to appoint a registrar to keep a book containing the names of the owners and all proprietary medicines and full particulars of their ingredients. Every such medicine must be registered and allotted a number, which must figure on any vessel or packet in which it is sold. The advertising of proprietary medicines is to be rigorously censored. No statement that a physician or dentist has recommended such a preparation may be published without his qualifications and address. It may be remarked that this practice is forbidden by the ethical rules of the medical profession. Quotations from medical journals must be accompanied by the name, date and page of the publication. It will be an offense for the vendor of a proprietary preparation to invite persons suffering from any ailment to correspond with him with a view to treatment. After six months from the passing of the act, no person will be permitted to sell any medicines or appliances purporting to cure or relieve deafness, or any other of ten ailments mentioned in the bill. The minister of health will be empowered to remove from the register any medicine that he considers likely to cause injury if used in accordance with its registered directions. One of the chief objects of the bill is the establishment of a new government department to act as an official censor of advertisements. The trade interests concerned will do everything in their power to oppose the bill, as they maintain that the compulsory publication of formulas would have the gravest effects on well known proprietary businesses, as well as injuring pharmacists by placing them entirely in physicians' hands.

Sir Andrew Balfour Is Dead

The death of Sir Andrew Balfour, director of the London School of Tropical Medicine, has removed a distinguished investigator and great administrator. Born in Edinburgh in 1873,

he graduated from the university in 1894 and joined his father, who was a physician, in practice. But his interest soon turned in the direction of hygiene and he proceeded to Cambridge, where he took the DPH and did research work on typhoid. In 1898 he took the M.D. of Edinburgh with a gold medal for a thesis on the toxicity of dyestuffs and river pollution. He served as a civil surgeon in the South African war in 1900-1901, and in the latter year came under the influence of Sir Patrick Manson. In 1902 he was appointed director of the Wellcome Tropical Research Laboratories at Khartoum and health officer of that town, from which he banished the mosquito and malaria. He made important contributions to protozoology—the spirchietosis of birds and of man—and discovered leishmanoid disease of the skin. He worked out the life history of spirochetes in the tick. He suggested a floating laboratory on the Nile, and a special vessel was constructed and presented to the Sudan government by Mr. Wellcome. He explored the upper reaches of the Nile, making further protozoological research. In 1913 he returned home and founded the Wellcome Bureau of Scientific Research in London. In that year he made a tour in the West Indies and South America and arrived at the conclusion that monkeys are the reservoir of yellow fever. This has since been confirmed. During the Great War he was a member of the medical advisory committee to the Mediterranean Expeditionary Force and subsequently its president. Later he was scientific adviser in the campaign in German East Africa and still later he was invited to Palestine to advise on the antimalaria measures. In 1921 and in 1923 he was sent by the colonial office to Mauritius and to Bermuda to report on the sanitary condition. In 1923 he was appointed director of the London School of Tropical Medicine, which was founded largely by the munificence of the Rockefeller Foundation. He supervised every detail in the construction of this school, which was an advance on anything previously in existence in this country. In 1926 he delivered the opening address at the Johns Hopkins School of Hygiene. From 1925 to 1927 he was president of the Royal Society of Tropical Medicine. In 1930 his health broke down from a career of overwork, of which his untimely death is the result. In addition to his medical works, such as "Public Health and Preventive Medicine," "Memoranda of Medical Diseases in Tropical and Subtropical Areas" and "Health Problems of the British Empire," he wrote fiction. One book, *The Golden Kingdom*, was based on the tragedy of trypanosomiasis in Africa. He was created C.M.G. in 1912, C.B. in 1918 and K.C.M.G. in 1930. He was made D.Sc. and LL.D. of Edinburgh and LL.D. of the Johns Hopkins and Rochester universities. He leaves a widow and two sons.

Yellow Fever in Laboratory Workers in London

Three cases of contraction of yellow fever in the course of laboratory work have been observed in London. An assistant working in the Wellcome Bureau of Scientific Research with a Brazilian strain of the virus maintained in monkeys became infected. He was admitted to the Hospital for Tropical Diseases and treated with immune serum. The case ran a typical course of a moderate infection and terminated in recovery. The second patient examined the blood of the first and ten days later was taken ill. Blood taken from him eighty-nine hours after the onset produced fatal yellow fever in a monkey. After an illness of a month he recovered. A laboratory worker collected blood from this patient and performed a blood count on it. After an incubation period of ten days he developed a severe attack of yellow fever, and in spite of treatment with convalescent serum he died.

Dr. G. Carmichael Low and Dr. A. H. Farley, who have recorded these cases in the *British Medical Journal*, point out that the second and third cases establish the important fact that the virus of yellow fever can penetrate the intact skin of the hand. These cases show the great danger of taking blood

at least during the first four days of fever. In the laboratory of the Hospital for Tropical Diseases, antiseptic lotions were used for the hands, all utensils that came in contact with infective blood were sterilized, but gloves were not worn. This appears to be the only effective measure for preventing infection, for those who wore them in collecting and handling infective blood did not acquire the disease. In monkeys, 1 cc. of blood on the first day of fever contains from one to ten million certainly fatal doses. Microscopic quantities of blood will therefore probably infect. The excreta of yellow fever patients are generally regarded as noninfective and also the organs at necropsy, owing to disappearance of the virus at the time of death. But this should not be too lightly assumed, and precautions should be taken in cases of death before the fifth day of the disease.

PARIS

(From Our Regular Correspondent)

Jan 14, 1931

Psychopathic Hospitals in the French Colonies

A comprehensive article on the psychopathic hospitals of the French colonies has just been published. There are not so many of these but they are nearly all modern and remarkably well organized. They were built, in the first place, chiefly for the care of Europeans. The natives have a different idea of insanity from ours. The mental patient, as they view him, is a being inspired by some spirit and hence commands respect. But, with the increase in the number of native physicians and nurses, these ideas are becoming modified, and all the present hospitals are beginning to admit native mental patients, so that it has become necessary to provide several different sections, in order to separate the races and the sexes. The spread of alcoholism has contributed a great deal to the increase in the number of mental cases, both among the Europeans and among the natives. The most important psychopathic hospital in the French colonies is located at Bien Hoa in Cochinchina. It is surrounded by a tract of 17 hectares (42 acres) lying 33 kilometers from Saigon. It is electrically equipped and has pure water and swimming pools. A large portion of the tract is under cultivation and there are a number of workshops. The field work and the shop work furnish employment to the inmates, whereby the expenses of the institution are considerably reduced. During the period 1919-1928, 1,009 patients were admitted to the institution at Bien Hoa, of which number 16 were French, 13metis (persons of mixed blood), 827 Annamese, 66 Cambodians, 22 Tonkinese, 2 Laos, 56 Chinese, 2 Hindus and 2 Malays. Most of the Chinese, as soon as the first symptoms appear, are sent to their home country. Mental disease was most prevalent in the 21-45 age groups, there having been 608 men as compared with 401 women. The incidence was much greater among unmarried than among married men. Another similar hospital will be opened soon at Tonkin which is rapidly increasing in population and which is located a long distance from Saigon. A large hospital for mental patients has likewise been erected in Madagascar in the province of Ambolo. It is 18 kilometers from Tananarive. Its grounds comprise 4 hectares (10 acres) with eighteen pavilions, one of which is reserved for European men, another for European women, two pavilions are for native women, nine for native men, one pavilion with nine rooms is an isolation ward for hyperventilable cases, in addition to which there are pavilions for hydrotherapy, for the housing of the personnel, store rooms and kitchen. There is also an annex of the hospital consisting of a pavilion located on the terrain of the former Ambolo Leprosarium which is reserved for convalescents. Neither French West Africa nor French Equatorial Africa has as yet a psychopathic hospital but in his contemplated loan Cardon, the governor general has figured 3,000,000 francs (\$120,000) for the erection of a psychopathic hospital which will probably be located in

the Senegal region. Among the older colonies, Reunion Island and Guadeloupe each possesses a psychopathic hospital. The hospital at Saint-Pierre, Martinique Island, was destroyed in the Mont Pelée eruption in 1902. The hospital on Reunion Island is installed in a former colonial hospital at Saint-Paul. It comprises a section for men, a section for women and several pavilions to which pry patients or mild cases are admitted. The psychopathic hospital of Guadeloupe is located at Saint Claude. It admits mental patients from Guadeloupe, patients from Martinique since the destruction of the Saint-Pierre hospital, and a few patients from Haiti.

BERLIN

(From Our Regular Correspondent)

Jan 26, 1931

Physician and Artist

In a recent number of the *Deutsche medizinische Hochschrift*, Dr. Edwin Redslob, federal art commissioner, attached to the federal ministry of the interior, discusses the profound relations that exist between physician and artist. He describes Ernst Ludwig Kirchner as an artist who portrays, by means of many different modern devices, the secret of the eye that penetrates one's inmost soul and the mysteries of art by subtle inventions that cannot be learned in the art schools. In illustration of his argument, he tells this story. In 1915, when Kirchner, severely ill and scarcely able to move, reached the sanatorium in Kreuzlingen, he lay on a cot for examination while a number of physicians stood about him. Through a gap in the group of physicians standing about, the artist suddenly caught sight of a brilliantly plumaged parrot, and now what happened can best be understood by recalling Goethe's 'The Sesenheim Ride.' The artist was given, for a moment, the gift of second sight, enabling him distinctly to view himself lying there on the cot. The creative power within him had been touched and the artist forgot that he himself was the patient. He was conscious of only one thing: this picture with its vivid contrast between intense anxiety and the brilliant plumage of the parrot, a picture that he painted later. Such a situation shows how a work of art takes shape in the artist's mind, how, often, a single moment in which the artist is transported from the realm of the commonplace to the realm of the supersensuous furnishes him his first vivid conception. Such a situation is of interest to the modern physician, as it is especially instructive. The physician finds here the crossing to a knowledge of the psyche, the connection with the realm of the pathologic subconscious. And if, then, in persons whose minds have become apparently permanently enveloped by an impenetrable cloud he is able to discover the fundamental *motif* that a vivid impression suddenly dug in the patient's brain, he will find if it is in any wise possible, also the key to the treatment, and often the way and the means for the cure of the patient. It may be added that artistic intuition is not an uncommon manifestation in the physician.

Death of the Human Heart

Addressing the Berliner Medizinische Gesellschaft recently, Professor Hoeslin presented a number of electrocardiographic curves that he recorded in man during the last moments of life. It may be observed that the heart continues to execute contractions for a period after all life appears to be extinguished, that is, after respiration has ceased and pulse and heart tones can no longer be perceived. For several minutes—in some cases for as much as half an hour or longer—contractions occur, to be sure, gradually getting weaker and noted at increasingly long intervals. Sometimes, just before the final standstill, a period of increased stimulation sets in: that is, there develops for a short period a rapid beating, before a complete cessation occurs. In reality, however, not all life has left the heart even now, for certain elements may execute contractions yet and may respond

to stimuli. The elements in question are muscle fibers that run through the so-called tendon threads of the heart. In certain patients who previously were apparently perfectly well and at under some emotional shock suddenly collapse and are dead, Hoeslin succeeded in a few cases in recording with the electrocardiograph the condition of the heart at this moment. The cardiograph record revealed that the heart executes no further regular contractions but that its musculature has entered a condition characterized by fibrillation and irregular writhing movements, from which it does not recover. The movements gradually grow weaker, and after a short period (at the most six or seven minutes, according to the record) the permanent standstill occurs. Through intracardial injection of cardiac remedies (camphor, strophanthine, epinephrine), strong mechanical agitation or the application of induction currents, attempts have been made to restore regular beating of the heart. In no carefully recorded case has that been accomplished—at least, not after the aforementioned writhing of the heart had certainly occurred. It is more likely to be accomplished immediately after a sudden standstill of short duration. The cause of sudden death of heart origin may lie in a failure of the heart action with subsequent filling with blood through increase of the arterial resistance. No doubt the nerves supplying the heart play a part, and may be, in fact, in some instances, the sole cause. In analogy with the animal experiment, possibly here is an explanation for the sudden deaths that, without question, are caused solely by fibrillation, and in which an apparently healthy heart (and perhaps occasionally even an actually healthy heart) may suddenly enter a state of fibrillation that ends in death. In rare cases, it is a result of exertions or also through nervous influence. A great burden may be thrown on the heart muscle, whose functioning was previously impaired, or on the aorta and the blood flows through a tear in the wall into the pericardium or into the thoracic cavity, which naturally results in immediate death due to mechanical compression. It is to be hoped that, at least in isolated cases, endeavors to convert the standstill or the tortive movements into normal and, above all, continuous contractions may be crowned with success. That will be possible only in the event that the heart muscle is not too severely damaged and still has a reasonable amount of vitality.

The Number of Students

The total number of students matriculated at the universities of the German *reich* was, in the summer semester of 1930, 132,090, as compared with 122,391 in the winter semester of 1929, 1930 and 123,700 in the summer semester of 1929. Of the students in the summer semester of 1930, 95 per cent were German citizens and 5 per cent were foreigners. The number of freshmen entering during the summer semester 1930, which is evidence of the present eagerness to pursue higher studies, was 24,160, exclusive of foreigners. Of this number, 22 per cent were women (in the summer semester of 1929, 19 per cent). The proportion of men students, on the other hand, shows a decline. Taking the attendance at all the universities, the increase since 1925 has been 49 per cent. The University of Berlin still has the largest attendance (nearly 20,000), Munich has the second largest number (more than 12,000). The women students, as in the past, favored these subjects: medicine, modern languages, Germanic philology, pedagogy for public school teachers, mathematics, jurisprudence, political science, biology and the natural sciences.

Death of Prof. Leopold Kuttner

Jan 22, 1931, Prof. Leopold Kuttner succumbed to a protracted illness, at the age of 65. His passing signifies a great loss to medicine. He was regarded as an eminent internist. His calmness of manner, his attitude of assurance and, more particularly, his careful and devoted way of dealing with patients caused him to be for decades one of the most popular consultants

In the position of medical director of the Rudolf-Virchow-Krankenhaus in Berlin, which post he held from 1910 on, he proved his peculiar ability as a clinical leader. His voice was heard on all important questions affecting the hospital system of Berlin. Under the influence of Ewald, the director of the Berlin Augusta-Hospital, he devoted himself more particularly to diseases of the stomach, and in this field he soon gained a far-reaching reputation. In addition to an extensive practice as consultant and largely attended courses for students and physicians, he developed a comprehensive scientific activity. In collaboration with Lindner, he prepared a work on the surgery of the stomach. He is the author of excellent descriptions of appendicitis, gallbladder disease, cancer of the intestine and gastric ulcer. The present knowledge of the significance of occult hemorrhages is intimately associated with his name.

BELGIUM

(From Our Regular Correspondent)

Jan 21, 1931

Joint Session of Pediatric Societies

At a joint session of the Societe belge de pediatrie and the pediatric societies of Strasbourg and Geneva, among the more important communications, were the following:

THE PROPHYLAXIS OF TUBERCULOSIS IN CHILDREN

Dr Delcourt, who discussed the various modes of prophylaxis of tuberculosis in children, said there is general agreement that 90 per cent of the persons who become infected are infected with tuberculosis by the time they are 15 years old. Hence, it is before the age of 15 that prophylaxis must be applied. The crusade against tuberculosis should be chiefly prophylactic, for a disease that is everywhere and that causes 20,000 deaths annually cannot be routed by the application, in a few thousand cases, of pneumothorax, costectomy, phrenectomy and pneumolysis. The role of the sanatoriums is important. But if their number were increased a hundred fold they would be still insufficient. Devoted physicians make praiseworthy efforts to help patients and sometimes succeed in curing them and turning them back to society. It is the task of the physician to do everything in his power and to inspire the soul of the patient with hope. But it is not by a direct attack on tuberculosis in process of evolution, after it has caused often irreparable damage, that tuberculosis is to be conquered. A prophylaxis well understood will aid, and such prophylaxis must be general and complete.

Among the available means are the vacation colonies and the fresh air resorts. An indispensable condition for the admission of children to such treatment is a complete examination which should be made by a pediatrician familiar with tuberculous lesions in the child. But, alas! all too often frankly tuberculous children are sent to colonies along with weakly children, where they become sources of infection. Children who present lesions that are detectable by a careful examination require a special treatment, an appropriate diet and a management that they can not find other than in a sanatorium specially organized for their care.

PERTUSSIS

According to the classic doctrine pertussis is an infectious disease characterized by a slight catarrh of the upper air passages. Drs Pospischill and Fevter of Vienna were able to show, by means of histologic examinations in 100 cases characterized by lesions of the lungs in pertussis the nucleus of which was a peribronchovascular inflammation. Dr Corcu of Strasbourg by means of the radiologic examination was able to confirm the observations of Pospischill. He found radiologic evidence of constant changes characterized by tracheobronchial adenopathy and shadows that descend along the hilum toward the peribronchovascular space, producing in grave cases a triangular image with the diaphragm, producing in the base on the dia-

Pertussis is certainly not an insignificant catarrh of the air passages. It is associated with typical lesions that are revealed radiologically and that persist a long time after the paroxysms of coughing have ceased.

Supervision of Pharmaceutic Products

In his presidential address before the Congress of Pharmacy, Professor Schoofs of Liege called attention to the control of pharmaceutic specialties. The law in Belgium requires the formula of a pharmaceutic product to be stated on the label, but what guarantee has the purchaser that its composition actually corresponds to the formula given? Often, there is deception in the quality of the product sold. Physicians receive daily, in great number and free of charge, samples of these specialized products. Some contain active principles, among which one may mention atropine, hyoscyamine, sparteine, morphine, narcotine, codeine and ethylmorphine hydrochloride. Are these principles actually present? If so, in what doses? What is their degree of purity? Physicians prescribe readily these specialties, without other guarantee than the vague indications contained in a prospectus. The public, incompetent to judge but captivated by the outward appearance of the package and by deceptive advertising purchases these products at a high price, though often ineffective and sometimes even contraindicated, without consulting a physician, and thus all this damages the public health. A strict and effective control is needed. The pharmacists should examine these specialties, which, like the other preparations of their laboratory, are controlled by the inspection service.

Regulations Concerning the Title of Specialist

As a supplement to the resolution passed by the Congress of Occupational Medicine, the Federation medicale belge commissioned Professor Coppez to prepare a plan for the regulation and control of the title of specialist in the various branches of medicine. After a study of the question, Coppez has published his conclusions. He considers that 1 Under present social conditions a system of certification authorizing a physician to assume the title of specialist in a given specialty is indispensable. 2 The specialties in which such certification would be granted would be those recognized by the law pertaining to higher instruction, dated May 21, 1929: surgery, pediatrics, ophthalmology, otorhinolaryngology, dermatosyphilology, psychiatry, gynecology, urology, physical therapy. (To these might be added the specialties of internal medicine, diseases of the nervous system, and of the respiratory, digestive and cardiorenal apparatus.) 3 In order to obtain the title of specialist in a given branch the candidate should take in a recognized clinic a special course of training, the duration of which would naturally vary with the nature of the specialty. 4 An examination controlling such supplementary studies in the field of a given specialty is not desirable. 5 There should be created through the cooperation of the government and the Federation medicale belge commissions on specialists (one for each specialty) composed of university professors, heads of hospital services and practitioners who have acquired unquestionable skill in their specialty.

The commission for each specialty would prepare a list of hospital services and the like in which candidates for certification in that specialty would be allowed to take a special course of training in the capacity of assistants; it would confirm the certificates issued by the hospitals or other institutions in which such special course was taken, it would render a decision in any special matter that might arise and would provide an official list of those entitled to practice a specialty which would be given for the inspection of the public authorities and medicosocial bodies. 6 Only certified specialists would be permitted to announce themselves as such on their door plate and their prescription blank. They alone would be entitled to membership in scientific or professional societies for the promotion of their specialty.

AUSTRALIA

(From Our Regular Correspondent)

Jan 19, 1931

Health Conditions in the Pacific Islands

Throughout the whole of Melanesia there are three almost universally prevalent diseases, filariasis, frambesia (yaws) and hookworm infestation. Malaria is present in northern Melanesia (Papua, New Guinea and Solomon Islands) but is absent in the southern half, which includes Fiji, New Caledonia and the New Hebrides. Leprosy is prevalent to an enormous extent in southern Melanesia. Tuberculosis and other respiratory infections are relatively widespread in the neighborhood of white settlements. Bacillary dysentery is mildly endemic in most parts. Gonorrhea is prevalent in areas where laborers have returned from indenture.

The popular idea that the reaction of the native races to European contact results in a process of depopulation is considered by the mission to require qualification. The average infant mortality rate in malarious districts is 176.24 per thousand births during the first year of life, while in malarious free islands the rate is 158.3. The rate is tending to increase.

The diet of the Melanesian in his own village is bulky, not nutritious, difficult to digest, deficient in fat and in protein and often poor in vitamins A and C. The great majority of the natives live on a borderline diet or alternate between periods of plenty and periods of starvation.

It is concluded that a study of the causes of depopulation with correction of such as can be corrected, the institution of measures for the preservation of infant life by antenatal education of mothers and by the reduction of infantile mortality, the rapid dissemination of medical aid by routine medication and sanitation and the furthering of research and of native medical education will provide means for the control of health in Melanesia.

Such is a sketch of the report of the mission entrusted with a survey of health conditions in the Pacific Islands, published by the League of Nations Health Organization. The commissioners were Dr. P. Hermant and Dr. R. W. Cilento. The former is a Frenchman and the latter an Australian, thus selected on account of France and Australia being the chief nations represented in Melanesia.

Asiatic and Indian immigration was found to have a considerable influence on the disease picture. The distribution of amebic dysentery appears to coincide almost exactly with the distribution of Asiatic population. The same holds true with regard to the distribution of ancylostomiasis, ascariasis and probably other parasitic diseases. Fiji has a large population of Indians, almost equivalent in numbers to the native Fijian population. The Indians have certain definite disease characteristics which have tended to obscure and to modify the disease picture of the indigenous Melanesian. In New Caledonia a similar condition exists, but here it tends to become even more pronounced because, if the Loyalty Islands which have no Asiatic immigration, are excluded the indigenous population in that locality amounts to only 17,000. During the last five years Indo-Chinese labor has been introduced into the New Hebrides. A total of some 5,000 persons has been introduced and this number is increasing. Problems similar to those existing in New Caledonia and Fiji will presumably arise. In Fiji, where the Indian population is now fixed, immigration is small and indenture has ceased the process of modification may be said to be relatively at an end.

SPECIFIC DISEASES

Frambesia is almost universal in Melanesia in the coastal areas. The disease responds so readily to organic arsenic preparations that the use of these drugs has become an important factor in extending the influence of medicine to hostile tribes. The absence of syphilis among natives and the relationship

between frambesia and syphilis are important considerations in southern Melanesia on account of Asiatic immigration. This question is not so important in northern Melanesia, where there is no record of the occurrence of syphilis in a native.

The indigenous hookworm throughout the whole of Melanesia is *Necator americanus*. It is extremely widespread but appears to be of little significance or importance in actual hospital statistics. It probably acts by reducing the resistance to other diseases. In most areas it is possible to cope with the situation by occasional mass treatment. These conditions do not obtain when the causative organism is *Ancylostoma duodenale*. This organism is associated with Asiatic immigration. Its virulence is much more pronounced than that of *Necator*, it is much harder to expel, and it is not affected to the same degree as *Necator* by carbon tetrachloride. It is thought that the ancylostome is a factor of importance in certain European communities throughout the archipelago.

Filariasis is almost universal in Melanesia. It is a potent factor in economic loss. Elephantiasis, apart from the disfigurement that it causes, cripples a definite proportion of the natives and may have a minor effect on population. Among the manifestations of filariasis are abscesses of muscle, these may be either filarial or nonfilarial in type. It is only recently that attention has been devoted to myositis in the Pacific as a specific entity related to filariasis. The proportion of persons affected varies greatly from place to place, from 100 per cent to complete absence. Sayers has found areas which are free from filariasis or elephantiasis and it is noticed that in such areas myositis occurs as commonly and occasionally more commonly than elsewhere where filariasis is rife. It is suggested that this demands investigation. Other problems requiring investigation are the question of periodicity and that of the vector of the disease, which has been actually established only in some few localities.

Malaria is present in northern but absent in southern Melanesia. The possibility of its introduction into Fiji or New Caledonia calls for serious consideration. The factors that prevent the introduction of the disease have not been definitely determined. It is considered that malaria does not exist in either territory because anophelines have not been found. There is no adequate evidence of the nonexistence of anophelines other than the accepted fact of the absence of malaria and the fact that anophelines have not been discovered by any entomologic collector. It is considered most desirable that there should be a comprehensive survey of the whole of Melanesia with regard to the question of the vectors of both filariasis and malaria. Stress is also laid on the necessity for an examination of the whole of the literature dealing with the most important features of coordinated research that could be instituted. Since most of the administrations have neither the man nor the money for such an undertaking, it would be necessary for the scheme to be financed from outside.

Syphilis is virtually nonexistent except as a possibility of the future. On the other hand, gonorrhea is fairly common. The type of the infection is unusual in that it produces few complications and the question has been raised in some localities as to whether the disease is actually gonorrhea or As intercourse between the tribal groups becomes more frequent and intermarriage more usual, it is probable that the disease will progress.

Bacillary dysentery is not the scourge that it formerly was and the provision of adequate serum treatment aborts it with dramatic suddenness. Amebic dysentery, on the other hand, demands careful consideration. Since this disease is one of local routine, it is not considered that proper and suitable coordinated research could be recommended.

Tuberculosis is regarded as the most important feature in the problem of depopulation in certain of the administrations in Melanesia. The conclusions of the mission confirm the view expressed by Buxton in his report on the New Hebrides.

that there is some factor which outruns European penetration or civilization and which has a deleterious effect on the natives and that this factor is probably tuberculosis. As a result of the examination of the bodies of native laborers dying at Rabaul, it has been found that 24 per cent of all indentured laborers die of tuberculosis and that pneumococcal infection accounts for an equivalent number. In other words, half the total deaths of laborers are due to pneumonia or tuberculosis. The native develops but little resistance to diseases of this nature. It is suggested that he has not acquired the partial immunity found among European peoples. At the same time there is another factor to be considered—the food supply. The surprisingly good effects in certain localities of cod liver oil treatment and the important observations in relation to dietetic deficiencies indicate that in this field there may be an important factor in regard to survival.

Typhoid has not been seen in the British Solomon Islands Protectorate. It is extremely rare in Papua. It is becoming increasingly frequent in Rabaul and is engaging the serious attention of the administration. In Fiji and in New Caledonia it is a matter of the greatest importance.

Measles is said to have destroyed one third of the population of Fiji in 1874-1875 and in a second epidemic years later destroyed thousands of people, but it occurs at present without any virulent symptoms. The experience of Fiji has not been paralleled in any other part of the Pacific under review. In general, it is concluded that measles need no longer be feared. Diphtheria is beginning to assume the characters seen in civilized countries. Scarlet fever does not seem to occur.

THE INFLUENCE OF WHITE COLONIZATION

The mission did not express any definite opinions as to the manner in which white colonization affected the native population. The problem resolves itself into the adjustment of the native population to the 'civilized' environment. There are three stages of reaction to European contact. With the arrival of the white man there is an enormous initial decline of many native stocks. Secondly, there occurs a period which is relatively stationary. During this period the native struggles to adjust himself to his altered environment and his survival picture fluctuates irregularly toward an unstable equilibrium which is readily upset by any minor factor. This partial equilibrium is so delicate that pronounced effects may be produced on it by circumstances that would appear otherwise to have only a casual significance. Students of the depopulation of Melanesia have suggested numerous causes. Actual destruction of native life by violence may be disregarded. Over recruitment is now prohibited by rules and regulations. The wearing of clothes is found to have no significance one way or the other when observations have been made among populations, clothed and unclothed. Certain factors however are regarded as of definite importance. These factors are not confined to Melanesia but are universal in their application and would have an effect for depopulation on the members of any race. Whether their significance is sufficient to explain the present problem in Melanesia must be a matter for future investigation. These factors are the heavy infant mortality rate, the mortality rate at all ages from preventable disease and the fact that the great majority of natives alternate between periods of plenty and periods of actual starvation. The problem of depopulation in most instances may be solved by assisting the natives through the period of unstable equilibrium into the safeguards that insure the continuance of ordinary civilized races and particularly from a medical view by adjusting sociological questions.

MEDICAL EDUCATION AMONG NATIVES

Medical problems of Melanesia are complicated by the low state of civilization, the belief in magic and the scattered nature and the smallness of the native communities. It was

suggested long ago that it would ultimately be necessary to train and employ natives in a medical service. Experiments have been made in two directions. As early as 1885 the government of Fiji invited the chiefs to send eight or ten young men of approved intelligence and character with a view to their being given a course of instruction in the rudiments of human anatomy and physiology, medicine and surgery, together with the ultimate status after three years' service of native medical practitioner. In 1906 or 1907 a class of native women for training as midwives was instituted at a hospital under the supervision of a matron, the course being limited to six months or to assistance at a set number of deliveries. These schemes were continued for a number of years, but after a survey by Dr V G Heiser of the International Health Board of the Rockefeller Foundation, in 1916, it was thought that something more was needed if the native medical practitioner was to be a power in the country. Ultimately a central medical school was established at Fiji for the training of forty students. The Rockefeller Foundation agreed to contribute to this a diminishing proportion of the total expenditure for four years. After this period the responsibility for the continuance of the scheme was to fall upon the high commissioner for the Western Pacific. Among the students were to be twenty drawn from Fiji, four from the British Solomons and several Indian students. The administration of the territory of New Guinea has realized the difficulties of the former scheme and it has begun at the other end of the scale. An intelligent native is withdrawn from every village under control and is trained for three months at the nearest European and native hospitals in the simple technique of the commoner native diseases. He returns to his village free from head tax, accepted as a member of the local native administration and with a title of 'doctor boy' or 'medical tultul'. Every year he returns to the hospital for a recapitulatory course. The work done by these boys is surprisingly in excess of the slight training they receive, but their value lies not so much in this as in the fact that they represent an intelligent service of a wide-spread nature and they are an educational factor that makes civilized medicine a desirable commonplace to the natives of the village. Those now employed in the mandated territory number 2098 and some of them have a creditable length of service. It is thought that in twenty years it may be possible with the betterment of education and of living standards to train native medical practitioners to fill junior posts in the medical service for natives.

INFANT AND MATERNAL WELFARE

One of the largest factors in the diminution of native population is the great mortality that occurs during the first five years of life. In this matter it is the ignorance of the village mother that is of primary importance. The question of abortion and infanticide is of importance. Where polygamy was the rule certain anti-social practices have grown up since the substitution of monogamy as a result of the influence of missionaries. In some tribes a woman is deserted by her husband if she becomes pregnant because there is no other woman to carry out her domestic and agricultural duties. For the same reason a woman sometimes continues to work until she is in an advanced stage of pregnancy. Abortion is frequent from this cause and no premature infant survives among native people. In regard to infanticide Melanesians have for generations terminated pregnancy by the use of man plants most of which owe any potency they possess to the presence of tannic acid or by mechanical means such as the prolonged pressure of the pregnant uterus through the abdominal wall. It is estimated that eight or nine mothers died in every thousand births in these areas this figure was as high as sixty-five. Infants who are born are successfully born the hope to raise many children such as mulla feeding early weaning and perfect child rearing.

The training of native nurses and midwives has usually been attended with little success, owing partly to the type of women undertaking the work and partly to the extremely low status of women in most Mohammedan communities. A description is given of the work of committees of native women formed in the villages under the protection of the chiefs and at the urging of the government. This consists of a kind of public infant welfare clinic. It is founded on a knowledge of the psychology of the native and is described as already becoming extremely valuable. The activities for the care of pregnant women, for the feeding of infants and for the safeguarding of children up to the age of puberty represent the most direct attack on the problem of depopulation observed by the mission.

TURKEY

(From Our Regular Correspondent)

Ankara, Jan 8, 1931

The Opium Question

In regard to publications made recently by some foreign papers, especially Egyptian, concerning the illicit introduction of opium from Turkey, the Turkish official press replies. Because the object of the international opium convention of the League of Nations in 1921 was the ultimate restriction of opium cultivation, and considering from the economic point of view that the cultivation of opium is of importance to Turkey, we did not accept the League's invitation at the time. Besides, there are in Istanbul three commercial laboratories concerned with the manufacture of opium preparations and derivatives for medicinal use. That makes Turkey not only an exporter of opium but also a manufacturer of opium preparations and derivatives. On the other hand, Turkey, being through no convention under any obligation has never lost sight of the humanitarian point of view and under no circumstances has this point of view been departed from. With the humanitarian object in view the law concerning the manufacture of drugs and narcotics imposes certain conditions on laboratories manufacturing narcotic preparations and it controls the dispensing of such preparations within the country, controls the export of such preparations and has made prohibitive and punishable their illicit export. Besides at the time those laboratories export preparations of opium and its derivatives the consulates of the respective countries in Turkey are at once informed as to the amount and kind of the preparations about to be exported. Thus an opportunity is given for precaution to be taken by those countries. It is not right to confuse the good intentions Turkey has in regard to the use of opium for nonmedicinal purposes if despite all vigilance smuggling does occur. Turkey has been represented at all later opium conferences, at the preliminary conference in London in 1930, and is again to be represented at the Geneva conference in January, 1931. It should be added that Turkey does not shrink from becoming a member of the opium convention. But if the object of the opium convention or of countries that do not cultivate opium, or of some European countries that cultivate only a little, is to assume the monopoly of the manufacture of opium preparations and derivatives, this would be regarded as an injustice. The right Turkey has as an opium cultivating country should be recognized and a chance be provided for the sale of its opium preparations and derivatives in proportion to the amount produced. When this is realized a great step will have been made toward the international solution of the opium question.

The summary of a leading article on the opium question of another official daily reads thus: Turkey is ready to enter the international opium conference, to put under control the cultivation of opium and the manufacture of opium derivatives, and to permit export only by licenses. We can even go further and establish a government monopoly. Lastly we are ready to cooperate in all respects so that the humanitarian object may

be realized, but on condition that Turkey, whose cultivation of opium is extensive, be given a share on the world market in proportion to its extensive opium cultivation and to the manufacture of its numerous derivatives, which is important from the industrial point of view.

Prohibition on Importation of Gluside

The production of sugar in Turkey is not yet sufficiently developed to supply the country's demand, so imported sugar still plays an important part. Sugar costs twice as much here as in the United States. The Turkish diet is largely carbohydrate, and there are a great number of dishes, distinctly Turkish, in which the sugar content is high, from about 60 to more than 90 per cent. Among these are baklava, Turkish delight and helva, a preparation of sugar and sesame oil often with the addition of various nutmeats. As the latter does not require any additional preparation, it is a great favorite among the poor workmen, especially in winter.

The importation of gluside has in late years considerably increased but it is now being strictly prohibited. Only by special permission, which may be granted solely by the ministry of health is gluside necessary for medical treatment and other scientific purposes permitted to pass the customs. In order to import gluside one must apply to the ministry of health stating with what firm he intends to place the order and the amount he intends to import. The order may be made only after permission has been duly procured. Unless permission has been issued by the ministry of health, gluside will not be allowed to pass the customs. Gluside is sold at pharmacies only by prescription. Pharmaceutical houses are to sell wholesale only to institutions, pharmacies and manufacturers of proprietary medicines. Pharmacies, pharmaceutical houses and manufacturers of proprietary medicines are to keep a special book in which to enter the amount of gluside bought and from whom, the amount sold or otherwise disposed of, the date on which gluside was bought and sold, to whom, and with which prescription number. Pharmaceutical houses are to procure from their customers a signed statement as to the gluside sold them, which they are to preserve. If gluside is found in quarters of unauthorized persons these persons will be punished according to law, and the gluside confiscated.

Licenses Required for Milk Plants

Milk in Turkey is still being sold without being pasteurized. In some large cities, the child welfare societies have acquired small pasteurization plants where in limited quantities milk is dispensed for infants and preschool children. The milk of cows and buffaloes, which may be had all the year round, is being used for general consumption, in spring and summer the supply of sheep's and goat's milk is plentiful and at that time is often preferred for household use along with yoghurt (*Bacillus bulgaricus*), which may be made from all kinds of milk but is best prepared from the milk of sheep.

In cities the milk supplies are under the supervision of the municipal health departments. The specific gravity is being ascertained regularly, bacteriologic counts and tests for fat are made only on indication. Without exception all milk for consumption is being boiled in the homes. The tuberculin test for cows is not everywhere required. Recently the veterinary department of the Istanbul municipality has made an investigation as to the prevalence of tuberculosis among cows, out of 9,756 cows vaccinated, 632, or 6.4 per cent, had positive reactions. With the enforcement of the new public health law all kinds of milk plants, dairies or individuals selling milk are obliged to procure a license. Plants, dairies, means of milk transportation, milk selling stations and utensils are subject to inspection and control by the municipal health inspector. The different kinds of milk, the qualities of milk products, the condition of milk production plants, selling places and utensils are to be specified by the ministry of health in cooperation with

the ministry of national economy and to be issued as a municipal order. Licenses may be revoked if conditions do not comply with the minimum standard, or if utensils are insufficient.

BUDAPEST

(From Our Regular Correspondent)

Jan 29, 1931

The International Congress of Catholic Physicians

On the occasion of the Saint Emericus jubilee, the Catholic physicians of the world held an international congress in Budapest, last month. Professor Nekam, who presided, emphasized the fact that ethical problems should be discussed by authorities who stand also on positive religious ground.

Professor Pasteau of Paris, who spoke on Catholic physicians and the sex education of the nation, said that it is the duty of physicians, chemists, nurses and midwives in order to save the family and the community, to carry religion into the life of individuals. Marriage is not a union of interests and pleasure but the first act leading women to maternity. Intentional childless marriages, or marriages in which the number of children is artificially regulated, sin against nature. Physicians should explain moral hygiene from a medical point of view to parents, because it pertains to their sphere of action.

Pasteau, as president of the Saint Damian Catholic medical society, founded in 1884, gave a description of the function of this society, which has more than 2,000 members. The society aims to apply Christian virtues in the practice of medicine and official charity. He emphasized the usefulness of the Catholic medical unions, which at present are in operation in England, Belgium, Italy, Spain, Netherlands, Portugal, Tunis, Brazil, Colombia and the United States and which are being founded in Canada, Japan and Switzerland. To bring the Catholic medical unions of different countries in harmony, there was founded in Paris the secretariat of the medical unions of the different countries.

Bergmann, a member of the supreme hygienic board at Cleve, spoke on abnormal character. In psychopaths sex assumes a great role. Most psychiatrists forget that religious education could do a lot in improving sex ethics. For the Catholic academician the Aristotle scholastic philosophy is a possible solution of the great conflicts of psychic patients. It allows one to build up the doctrine of body and soul. Bergmann said that in psychoanalysis Freud has made advances which deserve recognition, but owing to its exaggerations and atheistic basis, and its idea destructive tendency, it is implicitly to be repudiated.

The Hungarian physicians who participated in the congress resolved to establish the Society of Hungarian Catholic Physicians this year.

Number of Medical Students at the Budapest University

In the new term, 540 students applied for registration of whom 97 were women. At the first term the number of applicants was 361 of whom 58 were women. Only 200 of these have been admitted (61.7 per cent of the male and 22.4 per cent of the female applicants). The minister of public instruction increased the number by 50 so that the first term students now number 250 while the rest of the applicants were instructed to register at the provincial universities, which had plenty of vacancies.

The Death of Professor Bernhard Vass

The Hungarian medical faculty has sustained a great loss by the death of Dr. Bernhard Vass, lecturer to the University of Budapest and director of the Budapest Bacteriologic and Public Hygiene Institution. The eminent bacteriologist and leader of the chemical analytic laboratory of the Polytechnic was in the service of the capital for twenty five years. He was removed in the field of bacteriologic research. His work in organizing

the Budapest public hygiene and bacteriologic institution is so exemplary that just this week a special commission from Italy came to study this institute as an example to follow. Likewise an invitation from Refik Bey of Turkey came to Professor Johann, director of this institute, to come to Turkey, with the permission of the Hungarian government and to direct the erection of a similar institute in Ankara, the chief purpose of which will be the training of medical officers of health. It was the tragedy of fate that Professor Vass could not live to see the opening of his institute, which is planned to take place early in November.

The Birth Rate in Budapest

According to recent statistics the birth rate is greatest in those districts of Budapest in which the population is the poorest and most illiterate, while it is the smallest in those districts in which the rich and well educated people live. The statistics reveal that in Budapest many more childbirths occur in the obstetric clinics than in private houses. On an average in the last five years three fourths of the births were in clinics and hospitals. In this respect Budapest resembles Paris. The fact that Budapest mothers prefer to go to public institutions is remarkable all the more because while the number of days of hospital attendance increased in the last fifty years four and a half fold, the increase of childbirths in public hospitals increased forty fold. The reason of this is to be sought in the unfortunate economic situation. It is much more pleasant for a wife to be confined at her own home, but she is much safer in a hospital or clinic and the whole thing costs her only a nominal sum. Eighty seven per cent of all illegitimate births take place in public institutions. One fourth of all children born in institutes are illegitimate. In Paris the proportion is still higher. In Vienna the rate of illegitimate births in institutes is 29 per cent while in Berlin it is 65 per cent, but including the total number of births the rate is 21 per cent. That the rate of stillbirths is considerably higher in institutions than in private homes is easily understood. For difficult labor women are taken to institutions. Even if the rate of stillbirths showed double, there would still be a smaller rate of stillbirths in institutions for at the beginning of this century the rate was 6/100, in later years it was scarcely 4/100. The rate in Paris is 11/100, in Berlin 6/100 and in Zurich 4/100.

Influence of Syphilis on History

Prof. Dr. Louis Nclam, the newly elected rector magnificus of the Budapest University, in his inaugural address discussed the influence which syphilis has exerted on the history of the world. He told his hearers with dramatic vigor that this new disease of the renaissance transformed the world. It separated England from the Roman Catholic church when King Henry VIII, who doubtless had syphilis, had a fierce controversy with Pope Clement VII, who refused to declare his marriage with Catherine dissolved. Had Catherine not brought to the world still born children and a girl, the later Queen Mary, with characteristic manifestations of congenital syphilis, Henry VIII would not have tried to hasten his union with Anne Poleyn. Pungent as usual in the hawthorn way, King Henry threw aside his connection with Rome. England became Protestant and instead of a spiritual power became a layal power. Protos or Nekam further explained how syphilis determined the ways of countries, nations, cultural currents and fashion. He told the names of those writers and artists who by reason of syphilis were ruined at a premature age. He mentioned that Dostoevsky and Oscar Wilde had syphilis. It caused a great flurry in the lay press that he named a celebrated Hungarian poet, László Ady, whose wonderful poems are translated in a hundred languages and who died several years ago at a relatively early age. Ady died in 1919 and his birthday celebrations were written just in the ten to fifteen years period which preceded his premature death.

Marriages

GEORGE BENJAMIN WISLOCKI Baltimore to DR FLORENCE CLOTHIER of Wainwood, Pa, February 13

WILLIAM P. PETRII Caro Mich to Miss Evelyn Chrysler of Wauhatchie at Toledo Ohio January 3

GEORGE JACOB BUSHONG Tompkinsville Ky, to Miss Carrie Hendrick of Indianapolis January 31

CLIFFORD LEE WILBOURN to Miss Lottie Mae Webber, both of Charleston S C January 20

LEROY I. GIBSON Pontiac Mich to Miss Lulu Flewelling in January at Toledo Ohio

LOGAN ELITS to Miss Arlene Dillon, both of Russellville, Ky in Marion January 27

HENRY B. MUSSINA to Miss Dora L. Kopp, both of Wilkesport Pa February 2

JOHN H. STUDEI Franklin, N Y to Miss Anna Jones at Sumner Pa February 25

FREDERICK B. MOOREHEAD to Miss Marjorie Maxwell, both of Chicago February 1

Deaths

Veranus Alva Moore * Ithaca N Y Medical Department of Columbian University Washington D C 1890 engaged in the investigation of infectious diseases for the bureau of animal industry, U S Department of Agriculture, 1890-1896 and chief of the division of animal pathology 1895-1896, professor of comparative pathology bacteriology and meat inspection 1896-1929 dean 1905-1929 and since 1929 emeritus professor of veterinary pathology New York Veterinary College, Cornell University member of the American Association of Pathologists and Bacteriologists formerly member and president of the school board for many years member of the board of health author of "Laboratory Directions for Beginners in Bacteriology" "The Pathology and Differential Diagnosis of Infectious Diseases of Animals" and others aged 71 superintendent of the Ithaca Memorial Hospital, where he died, February 11, of heart disease

George Pierce Twitchell, Greenfield Mass Harvard University Medical School, Boston 1882 member of the Massachusetts Medical Society and the Associated Anesthetists of the United States and Canada formerly on the staff of the Franklin County Public Hospital aged 75, died Dec 2, 1930

Carl W. Plumb * Grand Junction Colo, Denver and Gross College of Medicine, 1906 member of the American Psychiatric Association medical director and superintendent of the State Home and Training School for Mental Defectives, aged 51 died, January 19, of diabetes mellitus and nephritis

Thomas Holmes Walker, Philadelphia University of Pennsylvania School of Medicine Philadelphia, 1895 member of the Medical Society of the State of Pennsylvania, served during the World War on the staff of the Presbyterian Hospital, aged 59 died, February 2, of heart disease

John J. Reycraft, Petoskey Mich Detroit College of Medicine, 1891, member of the Michigan State Medical Society past president of the Emmet County Medical Society, on the staff of the Petoskey Hospital aged 63, was found dead in bed January 29 of cerebral hemorrhage

George Stephen Shattuck Los Angeles Michigan College of Medicine, Detroit 1881, professor of oral surgery and oral pathology in the department of dental surgery Detroit College of Medicine aged 89 died, Nov 30 1930 of chronic interstitial nephritis and bronchopneumonia

Charles I. Griffith * Washington D C Georgetown University School of Medicine Washington 1905, associate professor of pharmacology at his alma mater, served during the World War aged 53, died, Dec 21 1930, of essential hypertension and cardiac decompensation

Daniel R. Connell, Beloit Wis Chicago Medical College 1891 member of the State Medical Society of Wisconsin on the staff of the Beloit Municipal Hospital aged 62 died February 8 in St Anthony's Hospital Rockford, Ill, as the result of an injury received in a fall

Stephen Laurence Egart * Indianapolis, Indiana University School of Medicine Indianapolis, 1908, member of the Associated Anesthetists of the United States and Canada aged 58 on the staff of the City Hospital, where he died, February 6, of chronic myocarditis

Elmond Arthur Burnham * Washington, D C, Harvard University Medical School Boston 1894, member of the Massachusetts Medical Society, served during the World War aged 65 died February 11, in the Garfield Hospital, of cerebral hemorrhage

Cyril James Shiring, Pittsburgh St Louis University School of Medicine, 1929 resident physician at the Maternity Hospital Cleveland, aged 24 died, January 3, in the Mount Sinai Hospital, Cleveland, as the result of a traffic accident

Lettie Helen Woodruff, Rochester, N Y, University of Michigan Medical School Ann Arbor, 1877 member of the Medical Society of the State of New York aged 81, died February 11 of chronic myocarditis and arteriosclerosis

Delos Harvey Marcy, Williamsport Ohio, Ohio Medical University Columbus, 1902 member of the Ohio State Medical Association member of the Deercreek Township board of education aged 54, died, February 4 of heart disease

Frank August Sigrist, Baltimore University of Kansas School of Medicine Kansas City 1922 member of the Medical and Chirurgical Faculty of Maryland aged 36, died, January 27 in St Agnes Hospital of lobar pneumonia

Percival Ranney Bolton, Thomasville, Ga Medical Department of Western Reserve University Cleveland, 1889, Medical Department of Columbia College, New York, 1890, aged 65 died February 4 of angina pectoris

Frederick J. Wood * Cleveland Cleveland College of Physicians and Surgeons, Medical Department Ohio Wesleyan University 1902 aged 52 died suddenly, January 24, in St John's Hospital, of cerebral hemorrhage

Karl Phillip Reefy, Elvira Ohio Eclectic Medical Institute Cincinnati 1906 member of the Ohio State Medical Association aged 50 died, January 24 in Cleveland, of arteriosclerosis hypertension and heart disease

Harrison A. Kitchen, Butler, Pa Jefferson Medical College of Philadelphia 1890, also a druggist, aged 63, died January 20 in the Butler Hospital, as the result of injuries received in an automobile accident

Grant S. Vorhees, Prescott Mich Baltimore University School of Medicine 1898, member of the school board, aged 60 died, January 9, in Miami, Fla, of chronic interstitial nephritis and mitral stenosis

Samuel T. Rutherford, Stratford, Ont, Canada, Victoria University Medical Department 1889, member of the American College of Surgeons, county jail physician, aged 66, died, Nov 29 1930 of heart disease

Julian Decatur Maynard, Wadesboro N C, University of North Carolina School of Medicine, 1908, aged 46, was found dead in his car, February 1, of chloroform, presumably self administered

James F. Tanner, Hartford, Conn Baltimore University School of Medicine 1898, aged 61, died, Nov 5 1930, in Stratford, of pernicious anemia, chronic nephritis and myocarditis

Alexander Marshall, Ashton, R I Medical Department of the University of the City of New York, 1891, member of the state legislature, aged 69, died February 12, of Hodgkin's disease

Laurel A. Summers, Wherton, Kan, Marion Sims College of Medicine, St Louis 1893, aged 64, was killed Nov 30, 1930 when the automobile in which he was driving overturned

Herbert Anderson White * Raymondville, Texas Chicago Homeopathic Medical College 1898 aged 61, died January 24 in the Mercy Hospital, Brownsville, of septicemia

John Henry Kane Lexington Mass, Long Island College Hospital Brooklyn 1885, formerly postmaster, aged 80, died February 5 of chronic myocarditis and bronchopneumonia

Hubert Granville Wilbur * Long Beach Calif, Harvard University Medical School Boston, 1890, aged 71, died, January 25, of injuries received in an automobile accident

John P. Briscoe Washington D C Georgetown University School of Medicine, Washington, 1905 aged 49, died, February 15, in the Garfield Hospital, of pneumonia

William Thomas Stokes Alpine Texas, University of Alabama School of Medicine 1908 served during the World War, aged 53, died, January 25, of angina pectoris

William J. Saunders, Muskegon, Mich. Saginaw Valley Medical College 1903, member of the Michigan State Medical Society, aged 58, died, in January, of heart disease

Franklin George Johnson, Sheridan Mo., Medical-Chirurgical College of Kansas City, 1901, aged 57, died, January 6, of infection of the spinal cord and paralysis

Thomas W. Breaux, New Orleans, Medical Department of the Tulane University of Louisiana, New Orleans, 1898, aged 58, died, January 17, of chronic myocarditis

Isaac Johnston Campbell, Clover S. C. Hospital College of Medicine, Louisville, 1905, state senator, aged 49, died suddenly, February 7, of angina pectoris

Patrick Joseph Murray, Toronto, Ont. Canada University of Toronto Faculty of Medicine 1927, aged 31, died, Dec. 10, 1930, in St. Michael's Hospital

James Johnston Gillespie, Pincher Creek, Alta., Canada Queens University Faculty of Medicine, Kingston, 1904, aged 52, died suddenly, Nov. 28, 1930

George Hilbard Setzler, Crossett Ark., Memphis (Tenn.) Hospital Medical College 1896, aged 66, died suddenly, Nov. 23, 1930, of heart disease

Lydia Higgins, Muskegon, Mich. University of Michigan Medical School, Ann Arbor, 1884, aged 82, died, January 31, of myocarditis and chronic nephritis

Byron M. Moulton, Springville Maine College of Physicians and Surgeons Baltimore 1894, aged 65, was found dead, January 28, of heart disease

Raffaele Maglione, Brooklyn Royal University of Naples Faculty of Medicine and Surgery Naples, Italy 1903, aged 53, died, in January, of heart disease

Joseph Hormidas Roy, Lowell Mass. School of Medicine and Surgery, Montreal, Que., Canada, 1893, aged 65, died, January 25, of diabetes mellitus

John Kean, Chicago Bennett College of Eclectic Medicine and Surgery, Chicago, 1878, aged 98, died, Dec. 1, 1930, in Jacksonville Fla., of senility

George Pearn, Derrington Kan. New York Homeopathic Medical College and Hospital, 1894, formerly county coroner, aged 60, died, Dec. 14, 1930

Horace Garfield Dunham, New York Jefferson Medical College of Philadelphia 1913, served during the World War, aged 49, died, Dec. 6, 1930

Horace H. Thompson, Terre Haute Ind. Pulse Medical College, Homeopathic Cincinnati, 1886, aged 70, died, in January, of diabetes mellitus

William J. Shilliday, Hiles Wis. Detroit College of Medicine, 1891, aged 62, died January 16, in Rochester, Minn., of carcinoma of the colon

Samuel John Wylie, Columbus Ga. Columbus (Ohio) Medical College 1887, aged 67, died, January 20, of acute dilatation of the heart

Jeremiah W. Russell, Bellville, Ohio Starling Medical College, Columbus 1888, aged 71, was found dead February 4, of gastric carcinoma

Joseph Samuel Leslie, Tribune Kan. Barnes Medical College, St. Louis 1897, aged 68, died Dec. 27, 1930, of pulmonary tuberculosis

Mary S. Ertl, Los Angeles Hahnemann Medical College and Hospital Chicago, 1887, aged 75, died, January 12, of mitral regurgitation

Henry Westren Miller, Kansas City Mo. Western Homeopathic College Cleveland 1869, aged 85, died in December, 1930

William Herman Anderson, Littlefield Texas Bellevue Hospital Medical College New York 1890, aged 73, died Nov. 11, 1930

Johann F. E. Weiland, Fremont Neb. University of Colorado School of Medicine 1904, aged 68, died Dec. 6, 1930

William Young Fullerton, Port Williams N. S. Canada Bellevue Hospital Medical College 1872, died Dec. 9, 1930

John McLean Oniltha Ont. Canada (opened Ontario 1876) medical health officer, aged 80, died Dec. 4, 1930

John Barnes Rosson, Tuhira Calif. Medical College of Ohio Cincinnati 1872, aged 80, died Nov. 15, 1930

Gilman Davis, Portland Maine Medical School of Maine, Portland 1893, aged 61, died Nov. 7, 1930

Anton Anderson, Los Angeles Denver College of Medicine 1895, aged 74, died Dec. 17, 1930

Bureau of Investigation

MORE MISBRANDED NOSTRUMS

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

Sun Laxative Cold Breakers—The S. Pfeiffer Manufacturing Company of St. Louis, Mo., consigned a quantity of Sun Laxative Cold Breakers in December 1928, which were declared misbranded. Analysis showed the tablets to contain acetanilid extracts of a laxative plant drug traces of arsenic and cinchona alkaloids. It was falsely and fraudulently recommended as a cure for influenza and malaria. In December, 1929, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[Notice of Judgment 17059, issued November 1930]

B-L Cold and Grippe Tablets—The Blood-Life Company of Atlanta, Ga., shipped in October 1928, and January, 1929, a quantity of B-L Cold and Grippe Tablets that were declared misbranded. Analysis showed the tablets to contain 1 grain each of acetanilid, together with a quinine compound, caffeine camphor monobromate alone and a resin. The claim that the product was a remedy for influenza was declared false and fraudulent and in June 1929 judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[Notice of Judgment 17067, issued November, 1930]

Mathieu's Nervine Powders—Favreau and Collette of Spencer, Mass., consigned a quantity of Mathieu's Nervine Powders that were declared misbranded. When analyzed, the powders were found to consist essentially of acetanilid, baking soda and caffeine. The claim that they were a remedy for influenza and neuralgia was declared false and fraudulent and in December 1929 judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[Notice of Judgment 17069, issued November, 1930]

G. G. Germicide—Rose Rockwood of Belgrade, Maine shipped in October, 1929, a quantity of G. G. Germicide that was declared adulterated and misbranded. Analysis showed the product to consist essentially of formaldehyde, extracts of plant drugs including sassafras alcohol and water. Bacteriological examination showed that the article was not antiseptic in the dilutions recommended on the label. It was declared adulterated because it fell below the professed standard under which it was sold—that is, it was sold as a germicide when it was not. It was declared misbranded because the claim that it was a remedy for influenza, headache, neuralgia, bronchitis, indigestion, diarrhea, etc. was false and fraudulent. In February, 1930 judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[Notice of Judgment 17086 issued December, 1930]

Success Cold Tablets—The Walgreen Company, Chicago Ill. shipped in October 1929 a quantity of Success Cold Tablets that were declared misbranded. Analysis showed the product to contain acetanilid, some laxative plant drug extractives with wintergreen flavor. The claim on the label that the product was a remedy for influenza was declared false and fraudulent and in February 1930 judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[Notice of Judgment 17094 issued December, 1930]

Muco-Solvent—The Hiesig Ellis Drug Company and the Van Fleet Ellis Corporation both of Memphis Tenn. shipped a quantity of Muco-Solvent and Muco-Solvent Salve between August 1928 and August 1929 that was declared misbranded. Muco-Solvent was found to consist essentially of alcohol and extracts of plant drugs glycerin alcohol (27.6 per cent by volume) and water. Muco-Solvent Salve was found to consist essentially of petroleum and volatile oils including camphor, menthol, turpentine and eucalypti. Muco-Solvent was declared adulterated because it was a laxative and a cathartic.

Correspondence

"STUDY OF HUMAN AMEBIASIS BY MEANS OF THE MOTION PICTURE"

To the Editor—In THE JOURNAL January 17, there appeared an article entitled "Study of Human Amebiasis by Means of the Motion Picture" by Barrow and Woodard, which has placed me in a very embarrassing position.

After years of intensely hard work Clifford Dobell was able to send me in Palo Alto cysts of three separate strains with compatible bacterial associations. After cultivation I furnished the California School of Tropical Medicine with live culture. I also expected a promise from Dr. Reed that the history of the strains should not be given out until Dobell's work on them should be published.

Barrow has given an entirely imaginary and absolutely erroneous origin for one of these strains that he took to Los Angeles. It is very possible that he did not have a human strain at all. Two of my three strains were of monkey origin and I have excellent reasons for believing the strain taken to Hollywood was not a human one. One might have expected that Clifford Dobell would have been approached with a view to obtaining permission to publish an article on the fruits of his labor—but, on the contrary, his name is not even mentioned in the article in question. I have had to apologize to Dobell for my share in making this distorted contribution possible.

TOINBEE WIGHT
Pasteur Institute
Tunis, North Africa.

THE COFFEY-HUMBER PATENT

To the Editor—Referring to Dr. MacDonald's letter in THE JOURNAL, January 10, may I suggest that Dr. MacDonald procure from the Chemical Foundation the complete photostated file of the Coffey-Humber patent transaction. He will see that the patent office in April 1930 refused to grant the patent in a masterly report on Coffey's preposterous claims, which were annihilated one by one by a patent examiner who dealt with them in a truly scientific fashion. He will also see (and it may surprise and shock him as much as it did me) that Ray Lyman Wilbur wrote the Patent Office requesting specially expeditious handling of the matter on account of his responsibility for the medical care of the American Indian and the Alaskan Eskimos. His next interesting discovery will be that Dr. Coffey's claims were resubmitted July 1, 1930, and the patent granted on July 2—the example of speed and efficiency which is a true tribute to the Great Engineer and his strong, silent way of getting things done.

JOHN M. REHRISCH, M.D., San Francisco

THE WIRING OF ANEURYSMS

To the Editor—Since the work of W. M. Millar (*The Use of Wires in Blood Vessel Surgery* Proc Soc Exper Biol & Med 28:193 [Nov.] 1930), who showed experimentally that zinc wire causes a quicker clotting than any other wire when placed in the thoracic aorta, I have had occasion to wire in patients two aneurysms of the ascending and transverse arch. One of the greatest difficulties was to find a source of supply for this wire but finally I was referred to the Hudson Wire Company Ossining, N. Y. which furnished me with zinc wire electrically prepared and virtually pure testing 99.99 pure zinc. The wire we used was number 23 B and S gage. It was thoroughly cleaned first and then roughened by abrading with coarse emery paper so that the circulating blood would strike these roughened surfaces and thus form the nucleus for a clot. It was found that a 17 gage lumbar puncture needle the point

when it was not, it was declared misbranded, first because the amount of alcohol it contained was incorrectly stated and because the statement that it was a remedy for catarrh, sore throat, tonsillitis, etc., was false and fraudulent. Mucic Solvent Syrup was declared misbranded because the claim that it was a remedy for piles, boils, croup, asthma, bronchitis, whooping cough, etc., was false and fraudulent. In January, 1930 judgments of condemnation and forfeiture were entered and the court ordered that the products be destroyed.—[Notice of Judgment 17087, issued December 1930]

Nervac—The Nervac Medicine Company, Bristol, Va., shipped in March 1929 a quantity of Nervac that was declared misbranded. Analysis showed the product to consist of extracts of plant drugs including laxatives, ethylic acid, glycerin and a small amount of alcohol flavored with wintergreen. While the label intimated that the preparation contained golden seal, no golden seal was found. Further, the amount of alcohol declared on the label was misstated while the curative claims to the effect that the preparation was a blood purifier and a remedy for liver, kidney and stomach disorders and nervous prostration were declared false and fraudulent. In February 1930 judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[Notice of Judgment 17088, issued December 1930]

Da-Lee Mouth Wash—The Da-Lee Chemical Company, Inc., shipped from Baltimore in November 1929 a quantity of Da-Lee Mouth Wash that was declared misbranded. The preparation was found to consist essentially of baking soda, small amounts of glycerin and volatile oils with 36 per cent of alcohol and water. Biological examination showed that the Da-Lee Mouth Wash was not antiseptic in the dilutions recommended further. The claim that the product was a remedy for catarrh, tonsillitis, pyorrhea, etc., was declared false and fraudulent. In February 1930 judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[Notice of Judgment 17089, issued December, 1930]

Selso Headache Powders—The Standard Manufacturing Laboratories of Macon, Ga., shipped in July 1928 a quantity of Selso Headache Powders that were declared misbranded. Analysis showed the powders to contain aspirin, phenacetin, and caffeine. The product was declared misbranded first because of the false and misleading statement that the powders were safe, it was also declared misbranded because it was falsely and fraudulently claimed that the powders were a remedy for catarrh, neuralgia, female pains, sleeplessness, tonsillitis, rheumatism, etc. In October, 1929 judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[Notice of Judgment 17090, issued December, 1930]

Marvel Chemical Tablets—The Marvel Company, New Haven, Conn., shipped in September, 1929 a quantity of Marvel Chemical Tablets that were declared misbranded. Analysis showed the tablets to contain boric acid, compounds of aluminum, iron, zinc and calcium, sulphates, carbonates, tannic acid and thymol. The claim on the label, that the product was a solution which would check infection and was of value for local discharges was declared false and fraudulent. In February 1930 judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[Notice of Judgment 17098, issued December 1930]

Fritch's Vegetable Soap—J. A. Fritch, St. Louis, Mo., shipped in January, 1930 a quantity of Fritch's Vegetable Soap that was declared misbranded. Analysis showed the product to be essentially a soap made from palm oil and perfumed with oil of citronella. Bacteriological examination showed that the article was not antiseptic. The claims on the label that the product was nature's own remedy and relief for skin diseases and that it was both antiseptic and germicidal were declared to be false, misleading and fraudulent. In April 1930 judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[Notice of Judgment 17160, issued January 1931]

of which had been beveled down, was suitable for entering the aneurysmal sac. In no case was any current passed through the wire, since Millar showed that clotting takes place with equal facility whether the current is passed through or not, in fact, he felt that the current may possibly be detrimental.

Since using the wire in these cases I have had occasion to furnish some of it to a local surgeon and also to send some to a colleague in Omaha.

FERDINAND C LEE, M.D., Baltimore.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted on request.

PERSISTENT IRRITATING VAGINAL DISCHARGE

To the Editor—Recently I have seen several women who complained of a severe irritating vaginal discharge. On examination a third degree retroversion and badly ulcerated cervix was found. I treated them a number of times with mercurochrome 220 soluble and tampons and then cauterized the cervix. These healed over with new tissue and looked perfectly normal. I also inserted pessaries to correct the retroversion. The discharge cleared up in all of them for a time but they have all been back complaining that it has returned. It is not as bad as before cauterization but it is still bad enough to cause trouble. Kindly advise me why this condition has returned and what I can do to clear it up. Please omit name.

M.D. Iowa

ANSWER—Most likely the discharge in these women is associated with *Trichomonas vaginalis* because this organism is frequently found in cases of troublesome and recurring leukorrheal discharge. Attention was called to this condition in this country by DeLee ten years ago and again by Greenhill three years ago. The diagnosis is easily made by examining a fresh drop of the secretion either as a hanging drop or diluted with salt solution on a glass slide. The drop of secretion usually consists of a large number of leukocytes and bacteria, many epithelial cells and many trichomonads. The parasites are spindle shaped or pyriform, and they are larger than a polymorphonuclear leukocyte but smaller than an epithelial cell. With the ordinary dry high-power lenses the organisms may be readily seen because of their motility. Greenhill says "The clinical picture produced by the *Trichomonas vaginalis* when it is pathogenic is rather uniform and striking. The patients complain of a profuse discharge which in about half the cases is associated with a burning or itching sensation in the vagina and on the vulva. In some cases the irritation is so severe that sleep is disturbed. The patients often scratch the external genitalia and an inflammatory reaction similar to intertrigo may result. Often the discharge has a very disagreeable and penetrating odor. On external examination small condylomas, either flat or pointed, may occasionally be seen but the introitus is usually reddened. The entire vaginal mucosa all the way up to the vault is found to be reddened and sometimes it is fiery red. In the introitus the redness is usually diffuse but in the vagina it may be diffuse or patchy. Often the vaginal mucosa has a deep orange color and usually it presents the appearance of an inflammatory condition. For this reason the clinical picture is called *Trichomonas vaginalis* vaginitis. The region of the external os is also usually red and it occasionally bleeds readily even though there is no erosion. No inflammatory condition, however, is found above the external os. The vagina contains a very large amount of greenish, yellow, foamy pus which looks like gonorrheal pus but sometimes the discharge is thin and watery. Most of it is found in the vaginal vault and it may have an acid alkaline or amphoteric reaction. Some patients are nervous due to the constant irritation, sleeplessness and fear of having contracted a venereal disease. Many go from doctor to doctor and while they secure temporary relief they are not cured. Quite a few women are unclean in their personal habits but by no means all.

Greenhill's present treatment is as follows: The vulva and vagina are thoroughly scrubbed with tincture of green soap the soap is washed out with mercuric chloride or tap water and the vagina is thoroughly dried. Hexyl alcohol is then applied all over the vaginal mucosa and a tampon saturated with glycerin is inserted into the vagina. A second dry tampon is inserted to prevent leakage of the glycerin. This treatment is continued every second day for at least four times or until

two successive hanging drop examinations fail to show the trichomonas organisms. After these treatments are completed the patient takes a douche once a day for about two weeks using an ounce of tincture of green soap to a quart of warm water. Since recurrences frequently take place just before or after a menstrual period, it is advisable to treat the patient during one or more menstrual periods following the first course of treatments (Greenhill, J. P. *Am J Obst & Gynec* 16:870 [Dec.] 1928).

The vaginal discharge described in these patients may be due to other conditions, especially thrush. In this case the mycelia may likewise readily be detected in fresh drops of secretion. This discharge may be cleared up by means of silver nitrate or a borax-glycerin combination.

MAINTENANCE OF CONSTANT PULSE PRESSURE

To the Editor—What is indicated when a pulse pressure is nearly always the same although the diastolic pressure and the systolic pressure vary? The reading may be 200/100 190/90 occasionally 180/80 or perhaps when the systolic pressure is unusually high a reading of 232/120 that is, I may get a pulse pressure of 112. I have had also 210/100. After administering amyl nitrite I had 170/72 but rarely do I have less than 100 pressure never below 96 but when the systolic pressure reached 232 the pulse pressure has reached 112 the diastolic being 120. Please omit name.

M.D.

ANSWER—In general, diastolic pressure represents resistance encountered in the vascular tree and is usually stable. Pulse pressure represents blood flow, it is the effective part of blood pressure so far as circulation is concerned and may vary considerably with changing conditions representing need for circulation, systolic pressure represents total heart work for the moment and varies greatly. Under normal conditions and in the individual case, the three tend to bear a definite relationship to one another, i.e. diastolic pressure is two thirds systolic pressure and twice pulse pressure.

A relatively high pulse pressure, 100 mm in this instance usually represents an increased demand for blood flow. It is frequently seen in thyrotoxic states associated with long standing adenomatous goiter with low grade intoxication and associated vascular damage. Under these conditions other evidence of hyperthyroidism may possibly be elicited, a small nodule in the thyroid gland may be palpable, the metabolic rate somewhat increased above normal, nervousness and tremor may be evident and the occasional appearance of glycosuria would substantiate such a diagnosis. It should be understood however, that all the observations enumerated may be obscure or may be present in varying combinations.

A pulse pressure of 100 mm is also frequently observed in aortic regurgitation. In this instance the vascular tension is not sustained during diastole, the blood regurgitating into the left ventricle through damaged aortic cusps. A diastolic murmur may be heard in the second right interspace or along the left border of the sternum and left hypertrophy is usually demonstrable. If compensation is well maintained, few symptoms if any may be present.

The diastolic readings given might be interpreted as indicating some grade of hypertension although such variation in diastolic pressure with occasional normal readings is unusual. Great care should be taken in making diastolic readings. The point at which the sharp first tone gives way to a dull note is accepted as the index of diastolic pressure and while this is the nearest auscultatory event that may be detected or near the true diastolic pressure level there is known to be a considerable error inherent in this determination. In some individuals also the change from the high to the low pitch may be difficult to determine and a 10 mm. error may be present under such circumstances.

In the present instance diastolic pressures varying from 60 to 100 mm as reported are not unusual since diastolic pressures tend to be fairly constant in the individual patient.

PREVENTION OF HEREDITARY PROGRESSIVE MUSCULAR ATROPHY

To the Editor—Can you give me any information regarding the prevention of hereditary progressive muscular atrophy in the offspring of an affected father who has two of its children? I have been able to find a list of the only hereditary progressive muscular atrophy.

OSCAR SAUNDERS, M.D., Green Park, W.

ANSWER—There is no possible way of preventing the development of progressive muscular atrophy in the offspring of an affected father. A child has to be used as a carrier of the disease in the child is destined to develop it.

QULRILS AND MINOR NOILS

JOHN A. M. A.
March 1, 1911

TREATMENT OF SYPHILIS
To the Editor—A man aged 24 white and married seen Oct 7 1930 showed a secondary syphilitic rash of a maculopapular variety on the palms of the hands chest penis and soles of the feet. No evidence of a primary lesion could be uncovered nor could a history of one be obtained. Diagnosis was confirmed by a Kahn test which returned 4+. Anti-syphilitic treatment was instituted at once 0.3 Gm of neoarsphenamine being given intravenously. Mercurialunctions were started. The following week the patient reported that in hour after receiving the intravenous medication he experienced a chill which lasted about twenty minutes. Other symptoms were not experienced. At this visit 0.6 Gm of neoarsphenamine was given intravenously. An hour later while the patient was still in my office he experienced a moderately severe nitritoid reaction evidenced by continued and severe chills intense headache and rhe pain in the joints and vomiting. All of which lasted about twenty five minutes. I discontinued the mercurialunctions at the end of this experience. I continued the intravenous injections at the end of which the Kahn reaction was 2+. Would you advise giving this patient a course of bismarsen sulpharsphenamine intramuscularly or another course of endobismuth intramuscularly in conjunction with mercurialunctions? If this is published kindly omit name.

ANSWER—The first reaction experienced by this patient to an injection of 0.3 Gm of neoarsphenamine might properly be interpreted as a so called Herxheimer reaction or therapeutic shock resulting from the flare up induced by the rapid action of a spirochete destroying drug. The reaction following the second injection however while perhaps also explainable on the same grounds is equally to be accounted for by other and more significant possibilities from the standpoint of the general management of the patient. The reaction is described as not strictly spending a nitritoid reaction. Instead it is to be classified as one of the general toxic reactions for which the causes vary all the way from improper technique of preparation and administration of the drug to decided and unusual idiosyncrasy on the part of the patient. Accepting the possibility that the technique of administration is at fault attention should be drawn to the fact that reactions of this type occur in patients who have been allowed to eat considerable quantities of food within several hours of their treatment. They also follow reaction and shaking of the neoarsphenamine solution in the process of preparation, which enormously increases the toxicity of the drug. They likewise occur following rapid injection of the drug a common fault in ordinary practice. Nitritoid crises, while comparatively common with arsphenamine are rare with neoarsphenamine. Any reaction following the intravenous administration of the drug which involves a chill likewise suggests the possibility of bacterial or other impurities in in unsatisfactorily prepared water or a technique that is not completely aseptic.

It is difficult to understand just what is meant by endobismuth injections which were substituted for the neoarsphenamine, following the second reaction. If by endobismuth is meant the intravenous administration of a bismuth preparation it should be pointed out that the Council on Pharmacy and Chemistry has wisely ruled that intravenous bismuth medication, in the present state of knowledge of the drug is not a justifiable form of procedure because of the narrow margin that exists between the therapeutic and the toxic dose of bismuth by the intravenous route. It might also be remarked parenthetically that it is unwise to govern the therapeutic procedure in any case of early syphilis apparently entirely by the serologic response. While a decrease in positiveness of the Kahn test from 4 plus to 2 plus is perhaps evidence of therapeutic effect it should not be used as a guide to the continuance or discontinuance of treatment. The proper management of an early case consists in the administration of a standard amount of treatment, determined by extensive clinical practice and compressed within a period of time ranging from one year to eighteen months and in any case extending if possible a year beyond the disappearance of the first symptom and sign of the disease. All this is quite irrespective of the reversal of the blood Wassermann reaction or the precipitation test.

With regard to the further mode of procedure in this case, the questioner should first recall his technique and decide whether or not there have been remediable faults which if recognized and corrected would permit the resumption of neoarsphenamine by a proper technique. If it is decided that the reactivity of the patient is due to idiosyncrasy rather than to error the relative merits of bismarsen (sulpharsphenamine bismuth) sulpharsphenamine and silver arsphenamine deserve consideration. Bismarsen, if given twice a week intramuscularly in the maximum adult dose of 0.2 Gm for a series of forty or more injections without a rest interval, offers reasonable prospect for a lasting therapeutic result.

Sulpharsphenamine, while well tolerated by patients is known to produce the highest incidence of exfoliative dermatitis of any of the arsphenamine groups in use at the present time. Silver arsphenamine, while it frequently produces immediate reaction has in all probability advantages over neoarsphenamine from the standpoint of therapeutic effectiveness and, if properly given, may be well tolerated by this patient. Bismarsen probably offers as low an incidence of complications as any of the drugs that are here suggested. If it is found that neoarsphenamine could be resumed the maximum dose should not exceed 0.6 Gm, at weekly intervals, and a smaller dose, such as 0.45 Gm, at intervals of from three to five days, would be preferable. The series of injections should reach twenty for the first course and from ten to twenty for the second course and a bismuth preparation of the readily absorbable type, though not necessarily a water soluble salt, may be given simultaneously and intramuscularly with the injections of neoarsphenamine intravenously. If bismarsen is used it is of course not necessary to administer a bismuth salt though the bismarsen course might well be followed by the use of bismuth preparations. Mercurialunctions in the patient will take them conscientiously, may be reserved for a post-arsphenamine treatment course. In general, an effort should be made to reach an arbitrary limit of thirty five or forty arsphenamine injections and perhaps four courses of a bismuth salt intramuscularly.

It should be realized that the delay in getting this patient treatment under way and the reduction in effectiveness brought about through the attempt to meet the complications has materially reduced the probability of a curative result and it is therefore doubly essential that this patient be kept under periodic observation throughout life. It is, moreover, necessary that a spinal fluid examination be performed with a full report on Wassermann cell count globulin and colloidal tests within the first year of treatment in order to forestall the possibility of asymptomatic neurosyphilis.

UNUSUAL WRITING PHENOMENON

To the Editor—Will you be kind enough to give me information concerning a rather unusual condition in a girl aged 7 years who had a marked internal strabismus which was partially corrected by surgery and glasses and who is rather backward in her classes owing no doubt in part to the visual defect. The patient was referred to me for a neurologic and mental investigation. The patient spells her name correctly but when told to write her name she begins at the right side of the page and writes the name beginning with the last letter and ending with the first letter which when complete places the letters in proper order. Her mother states that she also reads from the right to the left of the page. She is left handed. In looking up the matter in all available literature the nearest approach I find to this case is the condition of so-called mirror writing. It has been said to occur in defectives and those who are left handed.

ANSWER—The type of writing described is not that of mirror writing. Nevertheless at the age of 7 not much can be said about the type of reading and writing that a child may do. It is possible that she has a diffuse brain lesion and that special tutoring may cause this peculiar style which apparently has not been described in the literature. If the defect continues as the child grows older and reads more than the simple word combinations it will be an interesting phenomenon for careful and detailed investigation.

EFFECTS OF CHLORPICRIN

To the Editor—I am inquiring for the late effects of chlorpicrin on a person who worked in a plant that manufactured this gas. This man worked in the factory at Edgewood Arsenal Maryland in 1918 for three months. He states that he had always been quite well before that time but while working there he was attacked with abdominal cramps diarrhoea cough and weakness which affected most of the other employees. He was discharged from this plant after three months but ever since he has had similar attacks of distress. He has been examined at a number of places by many competent men some of whom have told him he had gastric or duodenal ulcers although he has never had any positive roentgenographic evidence. In the immediate vicinity of this factory was made also mustard gas and phosgene and I wish you would tell me whether any of these three poisons could cause a continuation of these complaints or any other trouble over such a long period of time.

ANSWER—Chlorpicrin in terms of toxicity stands between chlorine and phosgene but partakes of the qualities of each. The characteristic primary and principal tissue reactions are found along the respiratory tract, culminating in pulmonary edema. Chlorpicrin however, is known as a vomiting gas the significance of vomiting is of course trivial in comparison with pulmonary edema. All the symptoms noted in this case

MD Minnesota

may arise as acute manifestations of chlorpicrin poisoning, but their intermittent recurrence is not in keeping with concepts of a chronic lesion, particularly in the absence of renewed exposure.

The prevailing opinion is that gases such as phosgene, chlorine and chlorpicrin do not produce chronic lesions. To the contrary, a small amount of evidence indicates that the prolonged intake of such gases as chlorine may lead to emphysema or to chronic inflammation of the respiratory membranes, manifested chiefly by persistent severe coughing and obviously inflamed membranes and eventually by fibrosis observable on roentgen examination. Similarly, acute phosgene poisoning has been followed by sequelae causing total and apparently permanent disability.

In one instance, two industrial workers were exposed apparently, to phosgene, from the accidental production of this gas in industry. One man promptly died from pulmonary disorders associated with hepatitis. The second worker recovered from his acute lesions but in the ensuing ten years developed an extensive fibrosis, multiple arthritis a duodenal ulcer and some poorly defined gallbladder disease. Proof is lacking that a cause and effect relation exists in this situation. In a general way it is believable that any severe intoxication exacts some permanent toll from the life and well being of every injured individual.

In the present instance it is probably impossible to establish incontrovertibly that chlorpicrin is the cause of the condition described.

F. P. Underhill described the physiology and the treatment of poisoning with lethal war gases in THE JOURNAL, Aug. 30, 1919, p. 686.

PAIN IN BACK FROM INFLAMMATION OF MUSCLES

To the Editor—A man aged 39 was hit in the right lumbar region by shrapnel in France about 1915. Quite a number of pieces were removed at the time and now there are twelve or fifteen pieces about $\frac{1}{16}$ inch in diameter left scattered through the lumbar muscle. One of the vertebrae was injured at the time and it is out of line so that it shows plainly on the roentgenogram. This now brings us to the problem. The patient complains of severe cramping pains in these muscles. He is free from pain for weeks or months and then he has a recurrence of these pains. He has used electricity heat liniments poultices and various sedatives and analgesics. Nothing cures him. He now wears an abdominal support. Is there any treatment?

HENRY BAER M.D. Seattle

ANSWER—A light back brace of the Taylor or Goldthwait type and physical therapy, including radiant heat gentle massage and diathermy might be of benefit.

TREATMENT OF BRITTLE CUTICLE

To the Editor—I am writing to ask for some possible remedy for hardened and brittle cuticles with which I seem to be afflicted especially during the winter months. This may be a trivial query but it is an annoying condition and I would appreciate any suggestion. I had used a proprietary compound called Cutex with some relief. This seem to be an expensive preparation 35 cents for several cubic centimeters and I rather think a formula for it is simple. Kindly omit my name should this be answered through THE JOURNAL.

M.D. New York

ANSWER—The liquid used to soften the cuticle of the nail fold is probably a solution of potassium or sodium hydroxide. This is not a good thing to use because of the possibility of becoming sensitized to it and developing a dermatitis of the nail fold with consequent deformity of the nail. It would seem much wiser to prevent the drying of the skin by frequent use of a good cold cream or a borated cold cream (10 per cent) or one containing from 3 to 5 per cent of salicylic acid.

USE OF CAUSTICS IN TREATMENT OF CANCER

To the Editor—As a matter of information will you answer the following question: Does modern medicine approve of zinc chloride being used in any form in the treatment of cancer? We have in this community an M.D. who is using one preparation of zinc chloride promiscuously in the treatment of carcinoma epithelioma and various benign neoplasms and we are seeking information either in approval or disapproval of this treatment. Kindly omit name and town.

M.D. Kansas

ANSWER—The use of zinc chloride and similar caustics in the treatment of cancer has been practically abandoned by all except the cancer cure quacks. Such caustic are difficult to control so that there is destruction of healthy as well as of malignant tissue their action is slow thus unnecessarily prolonging the pain of removal. Much better results can be obtained by the judicious use of surgery when the growth is operable or by the use of radium and x rays when the disease

has advanced beyond the chance of its complete removal. The use of such caustics has been abandoned also by the progressive dermatologists in the treatment of small epitheliomas of low malignancy, they use, instead, radium, x rays, or coagulation with high frequency currents. The cosmetic and therapeutic results of the latter are much better than those following the use of caustics.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Written examination in nineteen cities in the United States and Canada. March 14 1931. Sec. Dr. Paul Titus, 1015 Highland Bldg. Pittsburgh Pa.
AMERICAN BOARD FOR OPHTHALMIC EXAMINATIONS Philadelphia June 8, 1931. Sec. Dr. William H. Wilder, 122 S. Michigan Ave. Chicago Ill.
CALIFORNIA Reciprocity San Francisco and Los Angeles March 15 1931. Sec. Dr. C. B. Pinkham, 420 State Office Bldg. Sacramento Calif.
CONNECTICUT Homeopathic New Haven March 10 1931. Sec. Dr. E. C. M. Hall, 82 Grand Ave. New Haven Conn.
MAINE Portland March 10 11 1931. Sec. Dr. Adam P. Ieighton Jr. 192 State St. Portland Maine.
MONTANA Helena April 7 1931. Sec. Dr. S. A. Cooney, Power Block. Helena Mont.
NEW HAMPSHIRE Concord March 12 13 1931. Sec. Dr. Charles Duncan. Concord N. H.
NEW MEXICO Santa Fe April 13 14 1931. Sec. Dr. W. T. Joyner, 20 21 First National Bank Bldg. Roswell N. M.
OKLAHOMA Oklahoma City March 10 11 1931. Sec. Dr. J. M. Byrum. Shawnee Okla.
WISCONSIN Madison March 21 1931. Basic Science. Sec. Prof. R. A. Bauer, 3414 W. Wisconsin Ave. Milwaukee Wis. Milwaukee April 14 1931. Reciprocity Applications. Sec. Dr. R. E. Flynn, 313 State Bank Bldg. La Crosse Wis.

THE AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY

Its Organization, Function and Objectives

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NEW YORK

The American Association of Obstetricians Gynecologists and Abdominal Surgeons the American Gynecological Society and the Section of Obstetrics Gynecology and Abdominal Surgery of the American Medical Association each elected three members to comprise the American Board of Obstetrics and Gynecology which was created and organized in September 1930. Membership on the Board is limited to the representatives of the three national societies and the members serve as both directors of the corporation and as examiners. The preliminary plans for the creation of the board encompassed three years time and involved the serious consideration of many details and possibilities as well as a study of the history and experiences of the American Board for Ophthalmic Examinations and the American Board of Otorhinology. The American Board of Obstetrics and Gynecology is particularly indebted to the latter organization for much helpful advice and cordial cooperation.

To justify the existence of a new medical organization its proponents must be prepared to advance more than mere ideas for its activities. They must have a definite objective in view not legislative or restrictive but educational and constructive. There is no need for further standardization or regulation of the medical profession and it is well to emphasize that it is impossible that the American Board of Obstetrics and Gynecology shall ever eventuate in an oligarchic group, claiming to exercise a dictatorial influence. The work of the board should be regarded and accepted as the coordinated effort of the three national organizations to elevate the plane of obstetric and gynecologic practice rather than as the operation of an arbitrary plan formulated by its members.

It has been stated that the present uncontrolled status of specialism will not be permitted to continue indefinitely. If medicine itself does not react to professionalize its specialties

state will." From every quarter comes the plea that the medical profession make a distinction between qualified and pseudo specialists. One of the state medical societies has gone so far as to memorialize its board of regents, recommending that the state establish some method for the regulation of specialists. The public, lay and medical, are entitled to ask what particular qualifications a specialist possesses, and by what authority he so designates himself. The term 'specialist' carries with it the implication of superior training and a background of extensive clinical experience. Unfortunately in many instances a few weeks' attendance in a clinic, at home or abroad or merely the individual's intellectual dishonesty has been responsible for deliberate misrepresentation and served as a pretext for the genesis of the self-styled but incompetent specialist.

The hospitals which exist solely by virtue of the services rendered by the members of their medical staffs must participate in the stabilization of practice in the specialties but under the circumstances as they have existed in the past not even these institutions themselves have had any criteria for evaluating the capabilities of their staff members, except in the field of ophthalmology or otolaryngology.

Although all licensed physicians are legally empowered to treat any and all diseases, it must be conceded that the undergraduate's education unless supplemented by thorough postgraduate training is totally inadequate for special practice. No physician is warranted in posing as a specialist unless he is really expert in his chosen field, and the essential fitness and skill can be acquired only by intensive study, prolonged training and wide experience. The necessity for the establishment of standards of qualification to fix the requirements for legitimate specialization seems self-evident. The practice of obstetrics and gynecology has been a prolific field for the origin of numberless mushroom specialists and has contributed its share to the disrepute into which specialization has fallen. Our British colleagues have also apparently come to a realization of these facts as they have recently organized the British College of Obstetricians and Gynecologists, which has for its chief object the institution of a postgraduate diploma in obstetrics and gynecology.

The principal activities of a board of examiners in any of the specialties should be devoted to encouraging and inducing potential specialists to prepare themselves thoroughly to persuading medical schools and hospitals to provide adequate facilities for special training, and to put the stamp of approval on qualified practitioners. It was with the intent of supervising not controlling the practice of obstetrics and gynecology by specialists that the American Board of Obstetrics and Gynecology was organized. There is no desire on the part of the board to curtail in any way the professional responsibilities that any licensed practitioner may care to assume. In fact the board is powerless in this respect, even if it had such an inclination. Neither does it pretend to imply that any distinguished or well-qualified specialist in obstetrics or gynecology requires a further testimonial of his proficiency. Its principal purpose is to encourage the study, improve the practice, and advance the cause of obstetrics and gynecology, subjects that should be inseparably interwoven and to grant and to issue to physicians duly licensed by law, certificates or other equivalent recognition of special knowledge in obstetrics and gynecology. The chief function of the board is to arrange control and conduct examinations designed to test the qualifications of voluntary candidates for a certificate to be conferred by the board. The certificate issued, however, does not of itself confer, or purport to confer any legal qualification, license or privilege.

The submission of operative case records and the assurance of a certain degree of mechanical skill alone can by no means be accepted as evidence of an individual's qualifications to practice obstetrics and gynecology as a specialty and the work of the board will not duplicate or conflict with the function of any other existing organization. The applicant's professional

and personal character, general training, knowledge of pathology, familiarity with the literature, and actual experience in his chosen field must all be taken into account and assessed. The requirements and scope of the examination are adjusted so that the competent man can be easily accepted and the unqualified one will never be certified. The examination includes

(1) a survey of the candidate's professional career, with particular reference to his special training and postgraduate work in obstetrics and gynecology, (2) estimation of the extent of his clinical experience, (3) an inquiry into his surgical judgment, (4) a determination of his familiarity with important contributions to current obstetric and gynecologic literature, (5) a test of his knowledge of obstetric and gynecologic pathology, both gross and microscopic, (6) a review of his general knowledge and utilization of modern diagnostic measures and therapeutic resources in the field of obstetrics and gynecology, and (7) a summary of his contributions to the progress and advancement of the specialty, by his educational activities, actual teaching experience and meritorious scientific articles appearing in periodicals exercising due editorial revision.

While the conferring of a certificate is only incidental, it is logical to expect that the national obstetric and gynecologic societies which have participated in the organization of the board and are sponsoring its activities will attach considerable importance to the certificate and that the medical and lay public, including hospital trustees, will adopt the certificate from this board as a means of discriminating between those who are well qualified for staff appointments as specialists in obstetrics and gynecology, and those who are not. The list of certificate holders will be published yearly, and each one will be specially designated in the Directory of the American Medical Association.

All members of the board serve entirely without compensation, and the application fee is consistent with the cost of the certificate, the expenditures involved in conducting the examinations, and legitimate overhead expenses.

580 Park Avenue

ADDITIONAL HOSPITALS AND LABORATORIES APPROVED

The Council on Medical Education and Hospitals of the American Medical Association has given its approval to the following hospitals and laboratories since the publication of the last previous list in THE JOURNAL, Oct. 11, 1930.

Hospitals Approved for Intern Training

Norwood Hospital Birmingham Ala.
St. Joseph's Hospital Phoenix Ariz.
Glendale Sanitarium and Hospital Glendale Calif.
Cedars of Lebanon Hospital Los Angeles
Lawrence and Memorial Associated Hospitals New London Conn.
William W. Backus Hospital Norwich Conn.
Lloise Infirmary Flore Mich.
Bryonne Hospital and Dispensary, Bryonne N. J.
Ideal Hospital Endicott N. Y.
Mary Immaculate Hospital Jamaica N. Y.
Morrisania City Hospital New York
St. Joseph Hospital Syracuse N. Y.
Duke Hospital Durham N. C.
Mercy Hospital Canton Ohio
Homeopathic Hospital Providence R. I.
Providence Sanitarium Waco Texas
Shanghai Sanitarium and Hospital Shanghai China

Hospitals Approved for Residencies in Specialties

Barlow Sanitarium Los Angeles
Cedars of Lebanon Hospital Los Angeles
Macon Hospital Macon Ga.
St. Luke's Hospital Chicago
Macon County Tuberculosis Sanatorium Decatur Ill.
Touro Infirmary New Orleans
Mercy Hospital Jackson Mich.
Montefiore Hospital Country Sanatorium Bedford Hills N. Y.
Cenese Hospital Rochester N. Y.
Knoxville General Hospital Knoxville Tenn.
Nashville General Hospital Nashville Tenn.

Pathologists Conducting Approved Clinical Laboratories

H. M. Weeter M.D. director Weeter Pathological Laboratory Louisville Ky.
Hollis A. Allen M.D. director Clinical Pathological Laboratory St. Louis
I. Warren Jackson M.D. director Laboratory of Clinical Pathology Austin Texas
A. M. Ecklund M.D. director Pathological Laboratory of the Kaula Medical Society Kaula Kauai Hawaiian Islands

Michigan October Examination

Dr F C Warnshuis, secretary of the Board of Registration in Medicine in Michigan, reports the written examination held at Lansing, Oct 14 16, 1930. The examination covered 14 subjects and included 100 questions. An average of 75 per cent was required to pass. Twenty-five candidates were examined and passed. The following colleges were represented:

College	PASSED	Year Grad	Per Cent
Loyola University School of Medicine	(1930)	80.9	82.3*
Northwestern University Medical School	(1930)	79.7	84.7
Ogden Graduate School of Medicine	(1930)	78	84.4
Rush Medical College	(1930)	79.7	84.7
University of Louisville School of Medicine	(1929)	82.2	85.8
Johns Hopkins University School of Medicine	(1929)	77.8	89.9
Boston University School of Medicine	(1930)	80	83.7
University of Michigan Medical School	(1929)	82.2	83.7
University of Minnesota Medical School	(1930)	82.9	79.6
St. Louis University School of Medicine	(1930)	83.7	80.1
Dalhousie University Faculty of Medicine	(1924)	79.6	78.9
(1928) 77.7 (1929) 82.7			
Queen's University Faculty of Medicine	(1929)	79.7	79.8
University of Alberta Faculty of Medicine	(1930)	77.8	
University of Toronto Faculty of Medicine	(1928)	79.8	
(1929) 79.8 80.9 82.8, (1930) 81.7			

Dr Warnshuis also reports 45 physicians licensed through reciprocity with other states from Aug 6, 1930, to Jan 1, 1931. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
University of Arkansas School of Medicine	(1928)	1926	Arkansas
College of Medical Evangelists	(1930)	1929	Tennessee
Howard University School of Medicine	(1929)	1927	Virginia
Chicago College of Medicine and Surgery	(1912)	1926	Illinois
Loyola University School of Medicine	(1930)	1926	Illinois
Northwestern University Medical School	(1929)	1926	Iowa
Rush Medical College	(1926)	1926	Illinois
Univ of Illinois Coll. of Med (1913)	(1913)	1926	Illinois
State University of Iowa College of Med	(1927)	1929	Iowa
University of Kansas School of Med (1911)	(1928)	1929	Kansas
University of Louisville School of Medicine	(1927)	1927	Kentucky
Johns Hopkins University School of Medicine	(1929)	1929	Minnesota
Harvard University Medical School (1926)	Kansas	1924	Minnesota
University of Minnesota Medical School	(1924)	1930	Minnesota
St. Louis University School of Medicine	(1930)	1930	Nebraska
Creighton University School of Medicine	(1926)	1927	Nebraska
University of Nebraska College of Medicine	(1925)	1926	Wisconsin
Albany Medical College	(1926)	1926	New York
University of North Carolina School of Medicine	(1903)	1929	N Carolina
Eclectic Medical College Cincinnati	(1916)	1928	Ohio
Ohio State University College of Medicine	(1916)	1928	Ohio
University of Cincinnati College of Medicine	(1923)	1928	Ohio
Hahnemann Medical College of Philadelphia	(1921)	1927	Penn
Jefferson Medical College	(1927)	1927	Louisiana
University of Pennsylvania School of Medicine	(1913)	1927	Penn
Memphis Hospital Medical College	(1927)	1927	Arkansas
University of Tennessee College of Medicine	(1927)	1927	Tennessee
Medical College of Virginia	(1927)	1927	Virginia
University of Virginia Department of Medicine	(1904)	1930	Virginia
Marquette University School of Medicine	(1930)	1930	Wisconsin
University of Toronto Faculty of Medicine	(1928)	1928	Penn
Lacerte of the Royal College of P & S, Scotland	(1900)	1900	Tennessee

* This applicant has received his M.B. degree and will receive his M.D. degree on completion of one year's internship in a hospital.

Wisconsin September Examination

Dr Robert F Flynn, secretary of the Board of Medical Examiners of Wisconsin, reports the oral written and practical examination held at Milwaukee Sept 10 1930. The examination covered 19 subjects and included 100 questions. An average of 75 per cent was required to pass. Seven candidates were examined and passed. The following colleges were represented:

College	PASSED	Year Grad	Per Cent
Rush Medical College	(1930)	80.9	82.3
Marquette University School of Med	(1930)	80.9	82.3

Dr Flynn also reports 24 physicians licensed by reciprocity with other states at the same meeting and on June 27, 1930. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
University of Arkansas School of Medicine	(1928)	1926	Arkansas
University of Georgia Medical Department	(1913)	1929	Georgia
Loyola University School of Medicine	(1930)	1929	Illinois
Northwestern University Medical School	(1929)	1926	Illinois
Rush Medical College	(1926)	1926	Illinois
University of Illinois College of Medicine	(1926)	1926	Illinois
Indiana University School of Medicine	(1929)	1929	Indiana
State University of Iowa College of Medicine	(1927)	1929	Iowa
University of Michigan Medical School	(1930)	1930	Michigan
University of Minnesota Medical School	(1930)	1930	Minnesota
St. Louis University School of Medicine	(1930)	1930	Missouri
Washington University School of Medicine	(1930)	1930	Missouri
University of Pennsylvania School of Medicine	(1913)	1927	Penn
University of Wisconsin Medical School	(1927)	1927	Wisconsin
University of Western Ontario Medical School	(1928)	1928	Ontario
University of Munich Faculty of Medicine	(1921)	1921	Germany

Book Notices

PROTOZOAN PARASITISM OF THE ALIMENTARY TRACT. PATHOLOGY, DIAGNOSIS, TREATMENT. By Kenneth M. Lynch, M.D., Professor of Pathology, Medical College of the State of South Carolina. Cloth. Price \$3.75. Pp. 258 with 57 illustrations. New York: Macmillan Company, 1930.

For years there has been need of a small book dealing in plain terms with the essentials of protozoic parasitism in man. The biologist has long known the species of protozoa infesting the human alimentary tract and has been familiar with their special morphology. Clinicians generally, however, have possessed little accurate knowledge of the subject. Few medical schools have maintained undergraduate or graduate courses dealing with protozoic parasitism; textbooks in common use give meager and vague information (often enough, too, illustrated by archaic drawings) on the topic. The general practitioner still regards protozoic parasitism as "tropical diseases."

Dr Lynch's book attempts to bridge the gap between the biologist and the clinician, and in view of the fact that the doctor is a pathologist and not a practitioner he has done a good job. There are brief but authoritative chapters on the life of protozoa, their dissemination and the prevention of infection, and then chapters containing a fairly complete morphologic, pathologic and clinical consideration of the common protozoa infesting man. The amebas (five chapters), the flagellates (four chapters), and one chapter each devoted to the ciliates, the coccidia and Blastocystis. These chapters are adequately illustrated with photographs of gross material (many original with the author), line drawings from actual material, by Mr J. M. Hicks, and reproductions of pathologic sections. It is informative and refreshing to note that the author has discarded the oft-reproduced and inaccurate pictures of protozoa and their effects which have marred textbooks for years and which date back almost to the age of "hand glass" pathologic observation. It is unfortunate that Dr Lynch has not seen fit to include reproductions of roentgen films ('progress' and 'enema' observations) which recent workers, notably Vallarino, have shown to be so helpful in gauging the damage to the bowel produced by the extraluminal activity of *Endamoeba histolytica*, *Balantidium coli* and the coccidia. It may be that as a pathologist the author has not had opportunity of observing the diagnostic value of roentgenography in this respect.

Of special worth Dr Lynch emphasizes the oft-neglected study of encysted protozoa as a means of accurate recognition of the protozoa; the observation of stained specimens from suited fresh material; the significance of cultures on the newer mediums (it is strange that in the chapter on the ameba the medium of Johns is not discussed), and the necessity for differentiation between pathogenic and nonpathogenic species. Sections on treatment are brief and on the whole in accordance with modern special practice.

In the management of endamebiasis special is not stressed so sufficiently as commonly and the therapeutic line relative to tracing the alimentary tract from the protozoa and the measures requisite for treating the extra-intestinal disseminations of the parasite and the damage that it has done is not so sharply drawn as clinicians would like to see it. It has been well established that it is the extra-enteric spread of such protozoa as *Endamoeba histolytica* and *Balantidium coli* that seriously incapacitates the host and requires the greatest efforts in management. Thymus and colon are not mentioned under the chapters dealing with treatment of the flagellates and ciliates even though they can have the backing of such eminent authorities as Dele and Castellani. There is but scant consideration of diet. Only casual mention (page 189) is made of the occurrence of protozoa in the liver and the biliary tract despite the recent observations made in this country, Korea, Soviet Russia, the French colonies, and South Africa.

The book contains a list of references important to its subject and there are both author and subject indexes.

Dr Lynch is to be congratulated on putting out a compact and authoritative book on a subject which has been hitherto neglected. It is a book which every clinician and biologist should have on his shelf. It is a book which every clinician and biologist should have on his shelf.

HANDBUCH DER NORMALEN UND PATHOLOGISCHEN PHYSIOLOGIE MIT BERÜCKSICHTIGUNG DER EXPERIMENTELLEN PHARMAKOLOGIE. Herausgegeben von A. Bethé, C. v. Bergmann, G. Lindén und A. Illinger. Band IV. Resorption und Excretion. Bearbeitet von A. Adler, Ph. Filling, O. Furrh usw. Paper. Price 99 marks. Pp. 849 with 186 illustrations. Berlin: Julius Springer, 1929.

HANDBUCH DER NORMALEN UND PATHOLOGISCHEN PHYSIOLOGIE MIT BERÜCKSICHTIGUNG DER EXPERIMENTELLEN PHARMAKOLOGIE. Herausgegeben von A. Bethé, C. v. Bergmann, G. Lindén und A. Illinger. Band XIII. Schutz und Angriffseinrichtungen. Reaktionen auf Schädigungen. Bearbeitet von M. Askanazy, R. Dörr, H. Ehrhard usw. Paper. Price 92 marks. Pp. 895 with 75 illustrations. Berlin: Julius Springer, 1929.

HANDBUCH DER NORMALEN UND PATHOLOGISCHEN PHYSIOLOGIE MIT BERÜCKSICHTIGUNG DER EXPERIMENTELLEN PHARMAKOLOGIE. Herausgegeben von A. Bethé, C. v. Bergmann, G. Lindén und A. Illinger. Band XV. I. Hälfte. Correlation I/I. Bewegung und Gleichgewicht. II/I. Physiologie der körperlichen Arbeit. I. Bearbeitet von H. v. Bracken, W. v. Buddenbrock, R. Du Bois Reymond usw. Paper. Price, 86 marks. Pp. 832 with 293 illustrations. Berlin: Julius Springer, 1930.

HANDBUCH DER NORMALEN UND PATHOLOGISCHEN PHYSIOLOGIE MIT BERÜCKSICHTIGUNG DER EXPERIMENTELLEN PHARMAKOLOGIE. Herausgegeben von A. Bethé, C. v. Bergmann, G. Lindén und A. Illinger. Band XVI. I. Hälfte. Correlationen II/I. Physiologie und Pathologie der Hormonorgane. Regulation von Wachstum und Entwicklung. Die Verdauung als Ganzes, die Ernährung des Menschen als Ganzes. Die correlative Funktionen des autonomen Nervensystems. Regulation der Wasser-Ionenkonzentration. Bearbeitet von I. Abelson, G. v. Bergmann, A. Biedl, O. Furrh usw. Paper. Price 121 marks. Pp. 1159 with 245 illustrations. Berlin: Julius Springer, 1930.

Four of the more recently published volumes of this exceedingly useful handbook have just come for review. These four volumes contain alone 1773 pages. It is obvious that a detailed and intensive review is out of the question here. At the best one can only indicate the table of contents of the present volumes and in a general way again call attention of the biomedical profession to the usefulness of this monumental work. The entire set of seventeen volumes is now nearing completion. No progressive modern medical biologic or hospital library can well afford to be without this extremely useful bibliographic and informational tool even if its first cost should seem to be prohibitive. It should be emphasized that this encyclopedic treatise over the range of the physiologic sciences comprises also the pathologic aspects of physiologic phenomena and hence should be found most useful to clinicians particularly since many clinicians of note have contributed important sections to the *Handbuch*.

Volume IV deals with normal intestinal absorption, deviations from the normal, pharmacology of absorption in the gastro intestinal tract, cutaneous absorption, absorption from the peritoneal cavity and other serous sacs, and the comparative physiology of absorption. After a discussion of the physiologic anatomy of the kidney and physical chemistry of the urine, the formation of urine is thoroughly discussed followed by a section on the theories of urinary secretion. Various kidney diseases are discussed. The kidney-like excretory organs of invertebrates completes this section. The remainder of the volume deals with biliary and urinary calculi, the intestine as an excretory organ, feces and excretion by the skin and the liver. Urine expelling mechanisms are thoroughly reviewed from a physiologic and pharmacologic standpoint.

Volume XIII, after discussing weapons of offense and defense among the protozoa and metazoa and the various toxins of animals and their action, devotes several small sections to color changes, pigmentation and autotomy. The greater part of the volume concerns itself with reactions (local and general) to noxious influences of various sorts. An excellent discussion of immune processes and allergic phenomena covers some 400 pages. The remainder of the book deals with phagocytosis and tolerance to poisons. It will thus be seen that this volume is of particular interest to pathologists and immunologists.

In the first 156 pages of volume XV is a consideration of posture equilibrium and movements of mammals, birds, amphibians, reptiles and invertebrates. Walking, running, jumping, swimming and flying are next discussed. There next follow several chapters on disturbances of posture and locomotion in man. This naturally leads to a discussion of vertigo and sea sickness. The remainder of the volume 300 pages is devoted to muscular work under the headings: physiology of work capacity of work in its dependence on the neuromuscular system, psychology of muscular work, permanent effect of strenuous muscular work

on organs (effects of training), and general metabolism of muscular work. This volume should be in the hands of every athletic director interested in the scientific aspects of the profession.

After a brief discussion of the morphology and chemistry of the endocrine glands, volume XVI takes up the various glands of internal secretion (thyroids, parathyroids, thymus, hypophysis, pineal, suprarenals and pancreas). Next comes an excellent discussion of the interrelation of the endocrine glands. The remaining subjects are specified in the title. The section on the parathyroids by Pincus is most inadequate. In fact, it is some six years behind the advances made by American authors.

A complete volume of the handbook can be bought separately.

INDUSTRIAL MICROBIOLOGY. THE UTILIZATION OF BACTERIA YEASTS AND MOLDS IN INDUSTRIAL PROCESSES. By Henry Field Smyth, M.D. Dr. P.H. Assistant Professor of Industrial Hygiene, University of Pennsylvania, and Walter Ford Obold, M.S. Assistant Professor of Biological Science, the Drexel Institute. Cloth. Price, \$6. Pp. 313. Baltimore: Williams & Wilkins Company, 1930.

The part played by bacteria yeasts and molds in the fields of medicine and agriculture is rather widely known. A few of the industrial applications of bacteriology are also matters of common knowledge. Such applications as are found in the manufacture of vinegar and alcohol, the role of bacteria and molds in the manufacture of cheese and the prevention of spoilage by refrigeration are examples. It is not so well known, however, that bacteria are of commercial importance in the production of such chemicals as butyric, citric and oxalic acids and amyl, butyl and isopropyl alcohols. The authors have attempted to get together these and other applications of microbiology to industry. The topics include those indicated and applications to other industries such as the manufacture of glue and of gelatin, tanning, the refining of sugar and the preparation of meats. The disposal of sewage by modern methods of treatment is referred to perhaps more briefly than the subject deserves, since the processes involved are fundamentally microbiologic in nature. Many of the other discussions are brief, but they serve to give the student of microbiology an insight into the more important commercial applications.

LABORATORIUMSTECHNIK UND RÖNTGENVERFAHREN. EIN HANDBUCH FÜR DEN ARZT UND DIE TECHNISCHEN ASSISTENTEN. Herausgegeben von Dr. Walter Justig, Oberreg. u. Obmed. Rat a. Pol. Pras., Berlin. Band I. Das Röntgenverfahren. Ein Lehrbuch für den Arzt und die technische Assistenten. Von Dr. Kurt Kirschmann, Facharzt für Röntgenologie in Berlin. Mit einem Geleitwort von Oberregierungs- und Obmedizinalrat Dr. Walter Justig. Paper. Price 23 marks. Pp. 345 with 283 illustrations. Leipzig: Georg Thieme, 1930.

This book is a complete reference library in itself for the roentgenologist or technician who is able to read German. Every phase of the physics of electricity and of the roentgen rays is discussed thoroughly and briefly. Such phases of the problem as the Quanten theory and the Compton effect, which the technician ordinarily considers complex and difficult, are described in a brief, simple, easily understandable manner. The section on the construction of the roentgen apparatus will be of little value to the user of American made machines, but the theoretical considerations are fundamental and valuable to the reader. An interesting chapter deals with the biologic effect of roentgen rays and radium on various types of tissue. The underlying principles of the various methods and the instruments used, for the measurement of radiation are described. Qualitative and quantitative dosage, depth dosage and cross firing are discussed, and numerous tables and curves are included to assist the reader. A chapter discussing dark room technique is included. An excellent chapter discussing twenty-four artefacts and film defects with directions for preventing these troubles will prove especially valuable for the technician. The chapter on technique is profusely illustrated and includes a discussion of all the apparatus commonly used, such as diaphragms, stereoscopes, immobilization devices and opaque mediums. There is also a series of photographs to illustrate the more common standard positions for examining the various portions of the body. A separate section deals with the technique of roentgen therapy and includes a description of the methods generally used. Methods of approach and protection of the patient are especially stressed. Another interesting chapter deals with the

uses of the roentgen rays in industry. Examination of metals for impurities, and chemical analysis by means of the roentgen rays are described. A brief description of the principles of radium therapy, a few words concerning the attitude of the technician toward the patient, a miniature medical dictionary and a list of the more common terms the technician is likely to meet in his work make this book the most complete in its field. A casual description of the contents of this volume really does not do the author justice. There is perhaps no other work of this type that is as thorough, easy to understand, and as completely illustrated. The book should be in the library of every roentgenologist and technician.

GYNÄKOLOGISCHE OPERATIONSLEHRE. Von Dr. H. v. Pecham, Hofrat o. ö. Professor der Geburtshilfe und Gynäkologie, Vorstand der I. Universitäts-Frauenklinik in Wien, und Dr. J. Amreich, Privatdozent für Geburtshilfe und Gynäkologie an der Universität in Wien. Cloth. Price 140 marks. Pp. 766 with 448 illustrations. Berlin: S. Karger, 1930.

This extensive treatise on operative technic is divided into three parts: (1) operative principles and technic of preparation for operation, (2) surgical anatomy of the female pelvis, and (3) operative indications and details of operative technic. In the first part there is a description of the modern operating room and materials employed, together with numerous illustrations covering fundamental principles. Methods of anesthesia, technical discussion of local, spinal and sacral anesthesia, the details of saline infusion, blood transfusion and the care of complications are excellently presented. Postoperative ileus, postoperative peritonitis and other complications are discussed in detail. Advocacy of surgical intervention as a routine measure in patients with postoperative peritonitis, and frequent recourse to major surgery in patients with serious puerperal infection and in accidental perforation of the uterus are not in accord with accepted American methods. The Vienna school appears to be still impressed with the high morbidity and mortality of puerperal infection, in contrast with American experience that expectant care nearly always yields satisfactory results. The second part is a well prepared and excellently illustrated section. Numerous drawings give in detail, special features of pelvic anatomy with emphasis on those features which are of most interest and importance to the gynecologic surgeon. A study of these charts would be clarifying to any one in need of information relative to the surgical anatomy of the female pelvis. The third portion of the book, concerned with the technic of special operative procedures, comprises two thirds of the volume. The principles and technic of operation for carcinoma of the cervix are well presented. The technic of vaginal hysterectomy and the details of the Litzko operation and the Wertheim technic of abdominal hysterectomy are excellently prepared and are illustrated by numerous drawings accompanied by accurately descriptive legends. This portion of the book is particularly attractive and described with unusual clarity. Other gynecologic operations, such as comprise the surgical work usually encountered in gynecology, are presented nicely. The technic of plastic procedures, while fairly satisfactory, is perhaps not up to the standard of the remainder of the book. On the whole Pecham and Amreich have made a real contribution. Their work is presented in an attractive and original manner. As a reference for the technic of operative gynecology the volume possesses unusual merit.

THE CHEST IN CHILDREN ROENTGENOLOGICALLY CONSIDERED. By F. Gordon Stollhoff, M.D., Assistant in Pediatric (Assistant Radiologist) at Sinai Hospital. Foreword by Bela Schick, M.D., Pediatrician at Sinai Hospital, New York. *Annals of Roentgenology*, Volume VII. Edited by James T. Crue. Cloth. Price \$15. Pp. 432 with 425 illustrations. New York: Paul B. Hoeber, Inc., 1930.

This is the work the pediatrician has long awaited. It is a roentgenologic panorama of chest conditions in children. Every clinical entity receives its roentgenographic replica. The author speaks the clinician's language. A pediatrician is the roentgenographer. The work is divided into sections on the trachea and bronchus, lungs, pleura, mediastinum, diaphragm and chest wall with appropriate and logical subdivision. It is not a glorified atlas. It is more than a description of plates. Rather, subjects are discussed and roentgenographic illustrations offered. One clinician is telling the other and his interpretation records physical conditions with the appearance on the film. There are

constant references to other plates scattered throughout the text testifying to the emphasis placed on differential diagnosis. In complicated situations the author exhibits diagrams. In this way explanations make clear such mysteries as how a given lesion may appear in misleading areas of the lung fields or be entirely lost to view on the plate, depending on the relative positions of tube and patient. The roentgenologically illiterate clinician who can only read a roentgenographer's report will be encouraged to learn that he too may decipher the plate. The roentgenologically puttering clinician will learn to appreciate the fine points and experience a keener zest in his roentgenologic searchings. Too much praise cannot be bestowed for the clarity of the plates and excellence of the format as regards quality of the paper and serviceability of the binding. In a work whose standard is excellence, two comments require registration. There is no section on the heart, which the title might lead the reader to expect. A preliminary section outlining the changes in the general contour and internal structure of the chest from birth to puberty would enhance the value of the material to the layro and complete an already comprehensive and authoritative volume. The development of the chest of the child could be diagrammed simply and illustrated with a few typical roentgenograms.

MEDIZINISCHE PRAXIS. SAMMLUNG FÜR ÄRZTLICHE FORTBILDUNG. Herausgegeben von Prof. Dr. L. R. Grote, Chefarzt der C. von Noorden Klinik, Frankfurt a. M., Prof. Dr. A. Fromme, Direktor der chirurgischen Abteilung des Städtischen Krankenhauses, Dresden-Friedrichstadt, und Prof. Dr. K. Warneke, Direktor der Städtischen Frauenklinik zu Dresden. Band IV. Moderne Pharmakotherapie. Grundzüge der klinischen Arzneimittellehre. Von Professor Dr. I. Lipowski, Chefarzt des Sanatoriums Kurhaus Hubertus, Berlin-Schlachtensee. Paper. Price \$50 marks. Pp. 166. Dresden: Theodor Steinkopff, 1930.

This booklet is intended to help the physician through the perplexing mazes of the newer remedies in a way attempting, to dispose of the problem for the Germans that the Council on Pharmacy and Chemistry is trying to solve for us though in a somewhat different manner, as the author classifies the remedies according to their use and discusses the older remedies that are still being used alongside the newer products. The author points to the remarkable fact that in Germany (just as in this country) an entire floor of a modern medical building is devoted to etiology, another floor to pathologic anatomy and its scientific investigation, another floor to diagnosis and prognosis, and in little room to the Cinderella therapy. Therapeutics must be endowed with special suitable institutes in which therapy in all its phases medicinal as well as nonmedicinal may receive adequate cultivation before a better day in therapeutics can dawn.

HISTORIC ARTIFICIAL LIMBS. By Vittorio Putti, M.D., Professor of Orthopedic Surgery, University of Bologna. Cloth. Price \$150. Pp. 63 with illustrations. New York: Paul B. Hoeber, Inc., 1930.

This book is of interest to the student of artificial limbs and to no one else. It contains a condensed exposition of what is known at present on the subject.

ÉTUDE SUR LES ARCELFÉSSIES. CONSIDÉRATIONS SUR L'APARTEIL RIGIDE LATÉRAL DU SOMMEIL. Par le Dr. Abbe Kyriakopoulos, de la Faculté de médecine de Paris. Paper. Pp. 195. Paris: Norbert Maloine, 1930.

In this doctoral dissertation prepared under the guidance of Professor Lhermitte, the author describes the various types of pathologic sleep. She rejects the notion of essential or idiopathic narcolepsy current in some quarters. In most of the cases that came under her observation a history of cerebral disorder could be demonstrated and she concludes that narcolepsy is symptomatic in nature. The presence, in the region surrounding the third ventricle of a mechanism regulating sleep is indicated both by the location of the lesion in patients suffering from disturbances of sleep and by the results of experimental work on animals. An extended bibliography completes the volume.

PETTITES CLINIQUES (DEUXIÈME SÉRIE). Par Louis P. Boudin, Professeur de Médecine à l'Université de Louvain. Paper. Price 3 francs. Pp. 247. Paris: Masson & Co., 1930.

This collection of clinical lecture is well arranged in the style for which the French clinicians are famous. American student and practitioners however have many excellent sources of similar nature at their disposal in English so that its usefulness to them will be limited.

Medicolegal

Pyogenic Infection an Accident

(*Maryland Casualty Co v Massey* 38 Fed (2d) 774)

Massey was insured by a policy covering death caused, independently and exclusively of all other causes, directly through accidental means. The policy expressly excepted from its benefits bodily injury through bacterial infections, except pyogenic infections which occur simultaneously with and through an accidental cut or wound. The insured plucked a hair from his nose, infection set in, and he died of septicemia. The beneficiary sued the insurer and medical testimony to the following effect was introduced. A hair is embedded in a follicle, the plucking of a hair will leave a tiny orifice in the skin or mucous membrane, which may provide a portal of entry for pyogenic germs into the blood stream or the lymph stream. Staphylococcus germs are usually present on the skin, infection from the plucking of a hair, while not wholly unknown, is very unusual, any injury to the skin or mucous membrane may provide a portal of entry for pyogenic germs, it is difficult for a physician in a given case to determine the exact portal of the entry. Thereupon the court instructed the jury to find for the beneficiary, if the insured died from blood poisoning induced from his pulling a hair from his nose, which caused a wound into which pyogenic germs entered it or about the time the wound was made. The jury so found and the insurance company appealed to the Court of Appeals of Maryland, Sixth Circuit.

Pope v Prudential Insurance Co 29 Fed (2d) 185, said the court, held that there cannot be said to be an accidental cause of any injury when the insured or those acting with his consent did precisely what they intended to do in the way in which they intended knowing that injury often did result and might be unavoidable and when there was no slip or misstep in the performance and no ignorance of any material factor. Whatever may have been the intended character of the insured's act there was a slip or misstep whereby his intended act was, as to the manner of its execution, transformed into an unintended one. If his act produced a wound by tearing or abrading the skin or membrane, certainly such a wound was not intended, and it may be reasonably presumed that infection occurred simultaneously with and through such a wound. There was ample evidence in the record, said the court, to sustain the instruction of the trial court and the finding of the jury. A similar problem was before the court in *U S Mutual Accident Assn v Barry* 131 U S 100, 9 S Ct 755, 33 L Ed 60. There Barry jumped from a platform, after two companions had jumped. They alighted safely, but Barry landed on his feet so heavily as to rupture his duodenum and cause his death. The beneficiary under a policy on his life was awarded judgment on the theory that there was some mishap in the jump, whereby the intended act was in the manner of its performance transformed into an unintended one. The judgment of the lower court was affirmed.

Evidence Chiropractor as an Expert Witness—In a suit based on personal injuries, the defendant objected to a chiropractor's testifying as to the nature and extent of the injuries and expressing an opinion as to their probable duration. He contended that the chiropractor was not shown to be qualified as an expert. It was shown said the United States Circuit Court of Appeals, Eighth Circuit that the chiropractor-witness was a graduate of a school of chiropractic and duly licensed to practice that calling and that the special parts of the body with which the chiropractor deals are the spinal column the spine, and the nerves. The testimony of this witness was restricted substantially to the parts of the body with which his profession deals and to the effect of injuries to such parts on the general health of the injured person. We think said the court that the qualifications of the witness were sufficiently shown and that his testimony did not exceed the limits of his professional knowledge as an expert—*Ellorica, Inc, v Hawkins* 38 Fed (2d) 731.

Medical Practice Acts "License Holder" Defined.—The appellant, by years of practice prior to the passage of the veterinary practice act of Ohio, 1894, was permitted to pursue his calling without taking an examination or obtaining a certificate. In 1925, however, the veterinary practice act was amended and only those were exempted from the obligation to obtain certificates who were "duly licensed" when the new act became operative. It was expressly provided that license holders might continue in practice. The appellant was convicted under the new act, on the theory that he did not have a license. A "license," said the Court of Appeals of Ohio, Cuyahoga County, on appeal is permission conferred by proper authority to pursue a certain trade, profession or calling. The appellant, having been given a legal status by the act of 1894 and permitted to pursue his calling without taking an examination, must be regarded as a "license holder" within the meaning of the act of 1925. He was duly licensed under the laws of the state to practice veterinary medicine and surgery at the time of the act. The judgment of the trial court was therefore reversed—*Staunforth v State (Ohio)*, 170 N E 578.

Workmen's Compensation Acts Injury to Teeth, No Causing Incapacity, Compensable—The general purpose of the workmen's compensation act is to provide compensation for loss of earning capacity resulting from industrial accidents. The scheme of compensation, however, is not necessarily limited to cases in which there is immediate impairment of earning ability. It is within the general purpose of the law, and within the power of the legislature, to provide for compensation for injuries which impair physical efficiency even though the present earning capacity is not directly affected. In most cases, disfigurement or loss of bodily function ultimately impairs earning capacity. Consequently where an employee lost one front tooth and another in an industrial accident he was properly awarded compensation even though the injury did not cause a present disability or incapacity for work—*Amalgamated Sugar Co Industrial Commission (Utah)* 286 Pac 929.

Society Proceedings

COMING MEETINGS

- Alabama Medical Association of the State of Birmingham April 21
Dr D L Cannon 519 Dexter Avenue Montgomery Secretary
- American Association for the Study of Gout Kansas City Mo April 27
79 Dr J R Yung 670 Cherry Street Terre Haute Ind Secretary
- American Association of Anatomists Chicago April 24 Dr George N
Corner University of Rochester School of Medicine Rochester N Y
Secretary
- American Association of Pathologists and Bacteriologists Cleveland
April 23 Dr H T Karsner 2085 Adelbert Road Cleveland Sec
- American College of Physicians Baltimore March 23 27 Mr E
Loveland 133 South 36th Street Philadelphia Executive Secretary
- American Orthopedic Association Memphis Tennessee April 15 18
DeForest P Willard 1916 Spruce Street Philadelphia Secretary
- American Pediatric Society Edgewater Park Mississippi April 15
Dr H C Carpenter 1805 Spruce Street Philadelphia Secretary
- American Physiological Society Montreal April 8 11 Dr Arno
Luckhardt 5216 Greenwood Avenue Chicago Secretary
- American Society for Experimental Pathology Montreal April 8 11
C Phillip Miller Jr University of Chicago Department of Medicine
Chicago Secretary
- American Society for Pharmacology and Experimental Therapeutics
Montreal April 8 11 Dr E D Brown University of Minnesota
Medical School Minneapolis Secretary
- American Society of Biological Chemistry Montreal April 8 11
H B Lewis University of Michigan Medical School Ann Arbor
Mich Secretary
- Arkansas Medical Society Texarkana April 21 24 Dr William
Bathurst Boyle Building Little Rock Secretary
- California Medical Association San Francisco April 27 30 Dr Em
W Pope 430 Sutter Street San Francisco Secretary
- Conference of State and Provincial Health Authorities of North America
Washington D C April 29 30 Dr A J Chesley State Board
Health St Paul Minnesota Secretary
- Federation of American Societies for Experimental Biology Montreal
April 8 11 Dr H B Lewis University of Michigan Medical School
Ann Arbor Mich Secretary
- Louisiana State Medical Society New Orleans April 14-16 Dr P A
Tilbot 1430 Tulane Avenue New Orleans Secretary
- Maryland Medical and Chirurgical Faculty of Baltimore April 28 30
Dr John T King Jr 1211 Cathedral Street Baltimore Secretary
- North Carolina Medical Society of the State of Durham April 20-22
Dr L B McBrayer Southern Pines Secretary
- Southeastern Surgical Congress Atlanta Ga March 9 10 Dr B T
Beasley 45 Edgewood Ave Atlanta Ga Secretary
- Tennessee State Medical Association Knoxville April 14 16 Dr H H
Shoulders 706 Church Street Nashville Secretary

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American Journal of Cancer, New York

15 1561 (Jan) 1931

- Surgical Aspects of Cancer Problem D Lewis, Baltimore—p 4
Care of Cancer Patient H Jackson, Jr and G R Minot Boston—p 6
Cancer W H Woglom New York—p 12
Neuronal Tumors P Bailey and P C Bucy Chicago—p 15
Malignant Mixed Tumor of Thyroid E F Hirsch Chicago—p 55
Spontaneous Tumors in Rats M R Curtis, F D Bullock and W F Dunning New York—p 67
Embryonal Nephroma in Chicken T D McKenney, Rochester Minn—p 122
Effect of Extracts of Suprarenal Cortex on Growth of Carcinoma Sarcoma and Melanoma in Animals K Sugiura New York—p 129
Cytology of Cancer M Levine New York—p 144
Technic and Instrument for Obtaining Biopsy Specimens W J Hoffman New York—p 212
Obscure Case of Breast Carcinoma B R Shore New York—p 221
Management of Swollen Arm in Carcinoma of Breast N Treves New York—p 271
Coincidence of Primary Breast and Uterine Cancer H C Taylor New York—p 277
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Massachusetts Cancer Program G H Bigelow, Boston—p 284
Cancer Education in New York City J C A Gerster and S M Wood, New York—p 286

American J Medical Sciences, Philadelphia

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- *Intravenous Vaccination with Streptococci in Rheumatic Fever H F Swift C H Hitchcock C I Derick and C McEwen New York—p 1
Etiology of Rheumatoid Arthritis R L Cecil E E Nicholls and W J Stansby New York—p 12
*Iron on Blood Formation Changing Acidity of Gastrointestinal Contents in Certain Cases of Anemia S R Mettler Berkeley Calif and G R Minot, Boston—p 25
*Epinephrine in Angina Pectoris J E Cottrell and F C Wood, Philadelphia—p 36
*Insulin Shock and Myocardium W S Middleton and W H Oatway Jr Madison Wis—p 39
*Diabetes Mellitus 1073 Cases—1919-1929 L F C Wendt and F B Peck Detroit—p 52
Hyperthyroidism and Associated Pathology W Lewis Boston—p 6
*Thyroidectomy for Thyrotoxicosis in Older People 200 Cases After Fifteenth Year J M Mora and E I Greene Chicago—p 74
Postoperative Parathyroid Insufficiency W M Boothby S F Haines and J deJ Pemberton Rochester Minn—p 81
*Brucella Infection Case Cultivation of Brucella from Bile H R Leavell and H L Amoss Baltimore—p 96
*Human Intestinal Protozoa Fendameba Histolytica in Residents of Temperate Zone J Andrews and M Paulson Baltimore—p 102
Relationship of Fungi to Chronic Splenomegaly of Unknown Origin H A Reimann Minneapolis and T J Kurotschin Peking China—p 107
*Cinchophen (Atophan) Poisoning Four Cases L Parsons Berkeley Calif and W G Harding Los Angeles—p 115

Intravenous Vaccination with Streptococci in Rheumatic Fever—The results obtained by Swift et al up to the present time are not final but are sufficiently favorable to warrant continuation and elaboration of the method. It is especially applicable to two classes of patients (1) those with a continuing low grade infection, (2) those temporarily free from symptoms but in whom relapses may be reasonably expected.

Etiology of Rheumatoid Arthritis—The evidence for the streptococcal origin of rheumatoid arthritis is summarized by Cecil et al as follows: Almost constant presence of streptococci in foci of infection. Streptococci recoverable from blood in 62.3 per cent of rheumatoid patients. 39 per cent in pathologic controls none in healthy controls. Streptococci recoverable from affected joints in 67.3 per cent of rheumatoid patients from blood or joint in 77 per cent none from non

rheumatoid joints. High agglutination of "typical strains" of streptococci with serums of 94 per cent of patients with rheumatoid arthritis. Disappearance of agglutinins with recovery from symptoms of arthritis. Biologic identity of streptococci recovered from blood, joint and focus of infection in the same patient, though there have been a number of exceptions to this rule. Reproduction of rheumatoid arthritis in rabbits with "typical strains of streptococci. Recovery of same streptococci from blood and joints of arthritic rabbits. Striking similarity of histologic changes in rabbits' joints to those in human rheumatoid joints.

Iron in Treatment of Anemia—Data are presented by Mettler and Minot on ten cases of 'secondary' anemia especially associated with a prolonged defective diet or chronic blood loss which responded rapidly and excellently to iron therapy. The response of the bone marrow to iron administered daily first in small doses with an alkaline and then with an acid beefsteak meal and followed by a fourfold to twelvefold increased dose of iron was studied by observing the course taken by the reticulocytes. Responses of reticulocytes occurred following each of the three procedures. The meat was used only as a medium to maintain the upper gastro-intestinal contents at an approximately constant pH and had no demonstrable effect on blood formation. The responses to iron fed with beefsteak at a high pH were usually slightly less than those that followed a few days later from the administration of the same dose of iron with meat at a low pH. Thus it is concluded, particularly because the same dose of iron fed with beefsteak at an acid pH caused a prompt second response of reticulocytes that iron is more potent for blood formation when absorbed from an acid than an alkaline medium within the intestinal tract. The third responses induced by increased doses of iron indicate that the small doses were not optimal and serve to emphasize the importance of optimal doses of iron for patients with anemia that can be benefited by this element.

Epinephrine in Angina Pectoris—In a single instance reported by Cottrell and Wood, subcutaneous injection of 1 cc of 1:1000 epinephrine as a diagnostic test for angina pectoris resulted in a violent attack of substernal pain persisting for over eight hours, in collapse unconsciousness, bradycardia, cessation of respiration and a fall in blood pressure from 170/115 to 80/60 and in electrocardiographic changes suggesting added myocardial damage. Therefore the therapeutic use of epinephrine in patients who may possibly have angina pectoris requires great care. This caution probably applies likewise to ephedrine.

Insulin Shock and Myocardium—Because of the gravity of the changes noted in the presence of myocardial lesions, particular caution is enjoined by Middleton and Oatway in the use of insulin in such patients. Where any question as to myocardial competency exists the avoidance of hypoglycemia must be insured by an adequate coverage of insulin through concomitant intravenous injections of dextrose even though there is no agreement as to the causal relationship of the depressed blood sugar. The practice of inducing insulin shock for whatever purpose is unphysiologic, and in view of possible myocardial injury its occurrence cannot be condoned if avoidable.

Diabetes Mellitus—A series of 1,073 cases of diabetes was analyzed by Wendt and Peck. There were twice as many females as males. The age of obesity was the age of diabetes or arteriosclerosis and of gangrene. Diabetes may develop following excessive nervous and mental strain and this type is usually mild. Familial factors were found in 14.8 per cent, and there is a much higher incidence among the more intelligent class. Syphilis is probably not as uncommon among patients with diabetes as has been supposed. A case of latent syphilis might possibly become activated under good diabetic management. Coma and arteriosclerosis are the chief complications. The former may be eradicated by educational measures plus insulin. The latter remains as the toughest problem and is the cause of the rising death rate from diabetes. Insulin is necessary for about one third of diabetic patients and must be used temporarily or another third, while the remainder can get along without it. Large doses are usually not necessary. Dextrose is not necessary in the treatment of most cases of coma. The cholesterol determination has been of value in following the progress of cases. A more nearly

constant blood sugar level may be obtained in some patients by feeding them every eight hours, and less insulin is used by so doing. The mortality rate is still rising. Arteriosclerosis is now the greatest problem in diabetic management.

Thyroidectomy for Thyrotoxicosis in Older People—A consecutive series of 200 cases of thyrotoxicosis is reported by Mora and Greene for which thyroidectomy had been performed on patients varying in age from 50 to 76 years. These formed 18.8 per cent of a consecutive series of 1,060 patients. The proportion of females to males was 2.5 to 1, 66.5 per cent of the cases were primary hyperplastic thyroids, the remainder were nodular goiters. The average duration of goiter was 11.68 years, the average duration of symptoms was 23.2 months, the average interval between the appearance of the goiter and that of symptoms was 14.5 years. The principal symptoms in this series were weight loss, tachycardia, nervousness, tremor, weakness, palpitation and exophthalmos, in the order given. There were thirty cases of preoperative auricular fibrillation, in twenty-seven of which normal rhythm was restored. Sixty-one cases exhibited exophthalmos. All but five returned to normal. The average preoperative basal metabolic rate was 41.6 per cent above normal, the average postoperative rate was 1.1. All of the cases, whether of the hyperplastic or the adenomatous type, showed a definite response to iodine therapy preoperatively. Of 175 patients on whom accurate postoperative data are available, 171 were completely relieved of their thyrotoxicosis, as measured by a fall to normal of the basal metabolic rate. There were 6 operative deaths in this series of 200 cases. The total mortality (7 deaths) of the entire series of 1,060 cases, which formed the basis of this report, was 0.66 per cent.

Brucella Infection—A case is described by Lervell and Amoss in which *Brucella* was recovered from the bile removed by duodenal drainage and from the gallbladder contents at operation. In a patient whose extirpated gallbladder contained *Brucella*, the stools, from which *Brucella* was isolated prior to operation, no longer showed these organisms following cholecystectomy.

Human Intestinal Protozoa—In 522 cases studied by Andrews and Paulson the total incidence of human protozoa infesting the intestinal tract was 10.9 per cent. By species: *Endameba histolytica*, 0.2 per cent, *Endameba coli*, 4.2 per cent, *Endolimax nana*, 2.5 per cent, *Iodameba williamsi*, 1.3 per cent, *Trichomonas hominis*, 2.1 per cent, *Chilomastix mesnili*, 1.3 per cent, *Giardia lamblia*, 2.7 per cent, *Embadomonas intestinalis*, 0.2 per cent.

Cinchophen Poisoning—Fifteen cases of fatal cinchophen poisoning have been recorded, including four reported by Parsons and Harding. Striking pathologic changes in the liver have been found in all of the fatal cases studied at necropsy. The total amount of the drug taken in these cases has varied from 37½ to 7,050 grains (25 to 456 Gm). Intensive dosage with cinchophen may produce acute hepatic degeneration. Long continued administration of the drug in moderate doses may result in subacute and chronic hepatic degeneration.

American Journal of Ophthalmology, Chicago

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- Blind Pensioners of Illinois W H Wilder and A M Hayden Chicago—p 8
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American Journal of Physical Therapy, Chicago

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- Radiology Progress and Future J M W Morison Manchester England—p 403
Physical Therapy in Cosmetic Dermatology H Goodman New York—p 409
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- Reconstructive Surgery Unilateral Progressive Facial Hemihypertrophy H I Updegraff Hollywood Calif—p 439
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Action of Sodium Amytal on Diseased Human Heart J O Bower J C Burns and H A K Mengle Philadelphia—p 469
Surgical Treatment of Chronic Empyema D H Bessenes Minneapolis—p 472
Danger of Prolonged Use of Iugol's Solution in Treatment of Exophthalmic Goiter A S Jackson and G H Ewell, Madison, Wis.—p 475
Surgical Goiter J I DeCourcy Cincinnati—p 482
Hypernephroma, Papilloma and Stone Occurring in Horseshoe Kidney J K De Vries New York—p 487
Fistulas of Abdominal Wall S T Glasser, New York—p 493
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Carcinoma of Anus and Rectum R A Cutting New Orleans—p 547
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Improved Foot Support Attachment for Thomas Splints G A Caldwell Shreveport La—p 562
Diverticula of Appendix P K Sauer New York—p 564
Complete Accidental Cutting of Ureter During Laparotomy Nonsurgical Anastomosis Case F T Lau New York—p 571
Benign Tumors of Hepatic Flexure A R Martinon, Havana Cuba—p 573
Benign Papilloma of Renal Pelvis F N Kimball New York—p 576
Traumatic Avulsion of Tibial Tubercle Healing by Fibrous Union B Goldmann Erie Pa—p 577
Infected Pelvic Hematocele Containing Fetal Bony Elements H B Matthews Brooklyn—p 581

Archives of Ophthalmology, Chicago

5 1160 (Jan.) 1931

- Accommodation A Duane New York—p 1
Complete Bilateral Congenital Exterior Ophthalmoplegia and Double Ptosis Bilateral Cerebral Cortical Atrophy of Frontal and Parietal Regions C E de Schweinitz Philadelphia—p 15
Anthomatosis or Iridoid Histiocytosis P Heath Detroit—p 29
Secondary Glaucoma with Detached Retina in Both Eyes W H Wilder, Chicago—p 55
Eye in Tuberculous Patient M Goldenburg and N D Fabricant Chicago—p 66
Keratitis Postvaccinosa A A Sinaiko Stevens Point Wis—p 91
Intraocular Cataract Extraction Present Status L F McAndrews Philadelphia—p 93

Archives of Pathology, Chicago

11 1169 (Jan.) 1931

- Cytologic Effects of Ligation of Major Blood Vessels of Kidney of Albino Rat H E Jordan J E Kindred and W H Paine University Va—p 1
Human Ureter with Striated Muscle and Ciliated Epithelium J McFarland and H M Woodbridge Philadelphia—p 18
*Fetal Adenoma of Hypophysis and Dermoid Cyst of Hypothalamus P F Shapiro Chicago—p 22
*Syphilitic Coronary Arteritis A R Moritz Cleveland—p 44
Malignant Nephrosclerosis (Fahr) P Klempner and S Otani New York—p 60
Ganglioneuroma of Retroperitoneal Origin J McFarland Philadelphia—p 118

Fetal Adenoma of Hypophysis and Dermoid Cyst of Hypothalamus—A fetal cell adenoma of the hypophysis and dermoid cyst of the hypothalamus are reported by Shapiro. The first tumor resembled one of the so called pars intermedia tumors. It originated, however, not from a pars intermedia but from the midportion of the pars anterior. It was composed not of the specific differentiated pars intermedia cells but of undifferentiated fetal cells. If man has a pars intermedia comparable with that of lower animals, it is rudimentary, variable and functionless. There is no histologic proof as yet establishing its presence. The dermoid cyst belonged to the group of inclusion tumors of the hypophyseal area. It was derived from embryonal rests of cranial external ectoderm included during the invagination of the brain vesicles. It was related to Erdheim's tumors derived from rests of oral ecto-

dorm inaugurated with Rathke's hypophyseal pouch. It involved the hypothalamus, leaving the hypophysis relatively intact, and yet produced the diabetes insipidus and the diabetes mellitus usually ascribed to hypophyseal lesions. The diencephalon rather than the hypophysis is chiefly responsible for these syndromes.

Syphilitic Coronary Arteritis—In six of the eight cases studied by Moritz, the stenosis of the coronary arteries was due to or contributed to by syphilitic arteritis of their proximal portions. In none of these did the arteritis extend farther than the first 10 to 12 mm of the vessel. In some, the stenosis was at the orifice, while in others the orifice was patent and the stenosis was distal to the aorta. Active syphilitic coronary arteritis was present with chronic inflammation of the aorta and in some cases the coronary disease was chronic while the aortic syphilis was active. The coronary disease was not in all cases associated with syphilitic aortic valvulitis. The course of the coronary arteritis as hypothesized from a comparison of the mild with the severe pathologic changes indicated that the vascular change began in the adventitia as an obliterative endarteritis with perivascular infiltration of lymphocytes and plasma cells and medial damage, progressing from the periphery in toward the lumen of the vessel. Some of the arteries with these mild changes were stenosed at their orifices by proliferation of the aortic intima. In cases in which the proximal extra aortic portion of the coronaries was stenosed the stenosis was due to intimal proliferation. In some instances the proliferated intima had the appearance of well vascularized granulation tissue infiltrated by lymphocytes and the media was disrupted by exudative, vascularized granulation tissue with considerable thickening of the adventitia. The end stage of this coronary endarteritis was thrombosis of the narrowed lumen with organization and in some instances, calcification of the obliterating thrombus. In three cases, immediate cause of death appeared to be an obliterative coronary arteritis. All three patients died following sudden cardiovascular collapse characterized clinically as coronary disease. Two of these three had preceding anginal attacks. Electrocardiographic studies were not significant so far as coronary disease was concerned and histologic studies of the myocardium failed to disclose evidence of infarction. It seems probable that in two of these cases there had developed a collateral circulation which by exclusion must have been either through the thebesian or through the aortic periadventitial vessels. The latter was deemed improbable because no periadventitial vessels of sufficient caliber to supply the heart were found in the ascending arch. In both of these there was almost complete obliteration of both coronary ostia, and this obliteration as judged from the histologic study, was of considerable duration. The reason for the failure of this compensatory circulation after its apparent functional competence was not disclosed. In the third case the syphilitic inflammation was active with military gummas and excessive proliferation of granulation tissue so that it seems possible for the obliteration of this vessel to have been an acute phenomenon. Certain observations made were considered to indicate the patency of coronary thebesian communications.

Association American M Colleges Journal, Chicago

6:164 (Jan.) 1931

- *Scholastic Aptitude Tests for Medical Students. F. A. Moss. Washington Conn.—p. 1.
Admitting Medical Students. P. C. Lewis. Denver—p. 1.
Instruction in Anatomy in Germany. I. I. Condit. Boston—p. 26.
(To be Cont'd.)

Scholastic Aptitude Tests for Medical Students—From Moss's report it appears that aptitude tests furnish a useful criterion for predicting success in the medical school. It seems further that better results can be obtained by a combination of test results with other criteria for selecting students especially with premedical grades. He says that no one criterion gives a perfect prediction and only prolonged experimentation will show what is the most reliable combination of criteria. The predictive value of personal interview ratings does not seem to be very high but this factor should be studied further in a larger number of schools and under better controlled conditions.

California and Western Medicine, San Francisco

34:172 (Jan.) 1931

- *Fecal Vaccines. Use in Chronic Arthritis and Certain Skin Diseases. W. H. Strietmann. Oakland—p. 1.
Petrolubular Neuritis and Multiple Sclerosis. C. B. Walker. Los Angeles—p. 5.
Surgical Treatment of Duodenal and Gastric Ulcer. V. C. Hunt. Los Angeles—p. 11.
Multiple Myeloma. L. Bryan and J. Levitt. San Francisco—p. 15.
Conduct of Normal Labor. J. Vruwink. Los Angeles—p. 20.
Gradenigo's Syndrome and Brain Abscess Secondary to Otitis Media. Differential Diagnosis. L. J. Adelstein. Los Angeles—p. 23.
Pyogenic Epydidymitis. Treatment. H. A. R. Kreutzmann. San Francisco—p. 26.
Dermatology for Nurses. E. D. Chipman. San Francisco—p. 28.
Enemata. S. A. Lewis. Los Angeles—p. 31.
Preoperative Medication. M. E. Botsford. San Francisco—p. 35.
Kienbock Disease. Compression Osteitis of Semilunar or Lunate Bone of Wrist. N. A. Cary and I. Barnard. Oakland—p. 36.
*Determination of Erythrocyte Measurements. G. Cheney. San Francisco—p. 40.
Dermatologic Neurosis. C. R. Lounsbury. San Diego—p. 44.
Extra Academic Origin of Medical Specialties. L. Crummer. Los Angeles—p. 46.
New Self Retaining Circular Abdominal Retractor. Circumtractor. H. R. Arnold. San Francisco—p. 49.
New Self Retaining Abdominal Retractor. S. H. Mentzer. San Francisco—p. 50.

Vaccines in Chronic Arthritis and Certain Skin Diseases—Strietmann records his experiences with fecal vaccines employed according to Wherry's method. In addition to four dermatologic cases reported, there was an intractable recurring pityriasis which is now free for three years, a chronically recurring angioneuroedema of long standing has now gone over a much longer time than ever before without recurrence four months, a case of exfoliative dermatitis which has recurred for the fourth time. All skin cases had either been tested for food allergies and diet found ineffective, or food allergies had been entirely ignored.

Determination of Erythrocyte Measurements—Blood films have been examined by Cheney with Eves hemometer in 100 cases in which there was no evidence of any abnormal condition of the blood. He found that the hemometer measures the mean diameter of erythrocytes accurately enough to meet all practical purposes. The determination of the average size of the red blood cells is essential to the investigation of a case of Addison's anemia, as a marked macrocytosis may in itself be diagnostic of the condition. A study of the morphology of the erythrocytes is important in the diagnosis and treatment of many disorders of the hematopoietic system. He feels that the facility with which the hemometer can be used should stimulate a more general study of erythrocyte morphology and bring a better understanding of this important subject into the general practice of medicine.

Illinois Medical Journal, Oak Park

59:180 (Jan.) 1931

- Sulphur in Fever Treatment of Paratyphoid. C. F. Reid. Elkhart—p. 21.
St. Vincent's Infant and Maternity Hospital: Past and Future. M. I. Blitt. Chicago—p. 24.
Atypical Surgical Mastoiditis in Children. M. H. Cottle. Chicago—p. 27.
Pregnancy in Uterus Unicornis. J. W. Burk. Chicago—p. 30.
Surgery of Thyroid. W. L. Bowen. Leora—p. 31.
Principles of Amputation. S. J. Coverdale. Chicago—p. 37.
Diagnosis of Carcinoma from Blood Serum. H. M. Janicek. Chicago—p. 40.
Unorthodox Keratosis. S. I. Sullivan. H. C. Rolnick and C. J. White. Chicago—p. 45.
Early Diagnosis of Chlucoma. C. W. Geiger and I. H. Roth. Milwaukee—p. 47.
Indication for Simple Mastoid Operation. I. M. Kut. Chicago—p. 53.
Local Anesthesia with Trilometethylalcohol (Avertin). I. R. Cuttman. Chicago—p. 58.
Complications and Treatment of Varicella. I. M. Zimmerman. Chicago—p. 60.
Smallpox. C. S. Nelson. Springfield—p. 61.

Indiana State Medical Assn Journal, Fort Wayne

24:168 (Jan. 15) 1931

- Heart Surgery. F. B. Mumford. Indianapolis—p. 1.
Natal Hyperplasia as It Affects Natal Ganglion. H. A. Varo. Indianapolis—p. 3.
Who Colds? D. W. Weaver. Greengburg—p. 6.
Medical Education in Indiana. M. N. Hall. Indianapolis—p. 9.
Actual Diphtheria Immunization. F. K. Carlo. Fort Wayne—p. 13.

Journal of Industrial Hygiene, Baltimore

12 359 403 (Dec.) 1930

- Effects of Lead on Vision Subhyaloid Hemorrhage T G Pedley Montreal—p 339
 *Effect of Electric Shock on Brain R Morrison A Weeks and S Cobb Boston—p 364
 Illness Among Wage Earning Adults D K Brundage—p 381

Effect of Electrical Shock on Brains—Sublethal electrical shocks were administered by Morrison et al by occiput and nose contact to laboratory animals, and the brains were subsequently removed and studied histologically with the aim of ascertaining whether electricity produced lesions in the nervous system and if so the nature of the lesions. It was found that lesions were produced in the brain sometimes even after a single shock the nature of the lesions depended, at least to some extent on the nature of the current similar wave forms producing more or less similar lesions. There were some overlapping types of lesions such as hemorrhage, which could be found in all cases and shrinkage of ganglion cells which could be found in three classes of cases but in general the various combinations of lesions were characteristic of the effects of different types of current. Nearly all the structures in the brain were involved in these pathologic processes. The ganglion cells were swollen under some circumstances and shrunken under others. The myelin was affected chiefly in cases in which the gliar proliferated and the nerve cells were swollen. In practically all cases there was congestion and hemorrhage. Edema of the brain was a common finding and, in conjunction with the swelling of oligodendroglia and the production of mucocytic or galactohypid degeneration presented interesting vacuolar lesions. In an attempt to explain the mechanism of the production of these lesions, the heat generated in the brain under most vigorous electrical strain was measured it was found to be relatively insignificant as long as the blood circulation was maintained but it increased rapidly when the circulation was stopped. Furthermore by means of the special technic devised by Forbes, the vessels on the surface of the brain were observed during electrical shock and it was found that they constricted or dilated during the passage of the current depending on the kind of current used. The condenser discharge and induction coil currents caused the vessels to dilate and the intracranial pressure to rise, histologically, one of the most characteristic lesions from these types of current consisted in swelling liquefaction and vacuolization of the ganglion cells. The alternating current, on the other hand brought about a constriction of the peripheral vessels a slowing of the blood flow and histologically a pronounced shrinkage of the ganglion cells. Attention is directed to the coincidence of vascular response with type of tissue change.

Journal of Infectious Diseases, Chicago

48 1 159 (Jan.) 1931

- Filtrable Forms of Bacteria I Filtrable Stage in Life History of Shiga Dysentery Bacillus P Hadley E Delves and J Khimek Ann Arbor Mich—p 1

Journal of Nervous and Mental Disease, New York

73 1 128 (Jan.) 1931

- *Surgical Intervention in Four Cases of Myelitis Compression Caused by Osseous Deposits in Arachnoidea of Spinal Cord L Puusepp Tartu—p 1
 Children as State Wards T J Farnell Providence R I—p 20
 Psychiatric Litvinov Colony Bourashevo Near Tver Urotropin in Some Cases of Alcoholic Psychosis L M Katzman Moscow—p 30
 *Subacute Combined Degeneration of Spinal Cord with Chronic Changes in Anterior Horns of Cervicodorsal Region T T Stone Chicago—p 41
 Ganglioneuroma of Third Ventricle with Diabetes Insipidus and Hypopituitarism J B Doyle and J W Kernohan Rochester Minn—p 55

Myelitis Compression Caused by Osseous Deposits in Arachnoidea of Spinal Cord—The four cases reported by Puusepp show that one must take into consideration that arachnoiditis ossificans can cause a compression of the spinal cord as well as a tumor or a meningitis circumscripta. At present injections of iodized oil performed according to Sequester's method are helpful in diagnosing similar diseases. As to the character of the process itself, in the first two cases there were typical osseous growths causing a compression of the spinal cord in the third case one may suppose that it was

the first stage, when the bony plates, having accumulated in one area caused an interruption in the flow of the cerebrospinal fluid provoking at the same time an inflammatory process similar to a meningitis circumscripta. This explanation is justified by the fact that in the second case a local accumulation of yellowish fluid was found at once with the osseous growth. The fourth case shows also the presence of a non typical tumor. Thus there is the possibility of various combinations, when either the plate itself grows to such an extent that it provokes a compression of the spinal cord or there is an accumulation of fluid a part of the growth may also have already completed its ossification, whereas the consistency of the second part is that of connective tissue. In these cases there is sufficient evidence to conclude that the pains in the roots that coexisted with the tumors could be provoked by a compression caused by the plates and besides, that the changes in the spinal cord found by many authors during the necropsy must be attributed to local compression of the spinal cord but not to general causes. The changes in the spinal cord found in the second case are characteristic of its changes caused by a compression.

Degeneration of Spinal Cord with Changes in Anterior Horns of Cervicodorsal Region—A case is reported by Stone which from a clinical standpoint was diagnosed as a subacute combined degeneration of the spinal cord. There was clinical evidence of wasting of the small hand muscles in explanation of which cellular changes as axonal retraction in the anterior horns of the cervicodorsal regions were found. Multiple hemorrhages were not found. Also no evidence of inflammatory reaction either in the leptomeninges or in the parenchyma of the spinal cord were found. The gray matter involvement was entirely separated from that of the white matter. In the dorsal and lateral aspect the white matter directly adjacent to the gray matter was normal. The clinical pathologic evidence seen is not sufficient to conclude an additional separate disease.

Journal of Nutrition, Springfield, Ill

3 345 451 (Jan.) 1931

- Effect of Use of Mineral Oil on Absorption of Vitamin A J I Rowntree Iowa City—p 345
 Preparation of Concentrated Source of Heat Labile Vitamin B Free from Contamination with Heat Stable Factor C H M Evans and S Lepkowsky Berkeley Calif—p 353
 Factors Which Determine Renal Weight VII Protein Intake and Age E M Mackay and I I Mackay San Francisco—p 375
 Id VIII Protein Intake and Sex I L Mackay and E M Mackay San Francisco—p 387
 Further Experimental Differentiation of Vitamins B and G H C Sherman and M R Snodells New York—p 395
 Influence of Bulk in Diet on Local Calcium and Phosphorus L Ascham Manhattan Kan—p 411
 Auto-Oxidation of Fats Destructive Effect on Vitamin E M J Cummings and H A Mittell—p 421

Medical Journal and Record, New York

132 573 624 (Dec 17) 1930

- Pulling Together Plan for Organization of Medical Groups J A Harrat Chicago—p 573
 Treatment of Varicose Veins by Injection Method Developments Regarding Choice of Solution and Technic J P Coll Newark N J—p 578
 Compression of Spinal Cord Diagnostic Difficulties A Gordon Philadelphia—p 580
 Acute Pleurisy in Bronchial Asthma Two Cases A H Fineman New York—p 583
 What Practitioner Can and Cannot Do in Gastro Enterology H J Birtle Philadelphia—p 584
 Postoperative Treatment of Sepsis and Peritonitis by Oxygen Inhalations R A Leonardo Rochester—p 586
 Aggranulocytic Angina H Mandelbaum Brooklyn—p 588
 Different Methods of Applying Ultraviolet Radiation W K Russell London—p 591
 Biologic Studies of Sunlight Filters W H Eddy New York—p 594
 Status of Window Materials for Transmitting Ultraviolet Radiation W W Coblentz Washington D C—p 596
 Measurement of Therapeutic Ultraviolet Radiation R S Estey New York—p 598
 Tungsten Arc as Source of Ultraviolet Radiation W J Turrell Oxford England—p 600
 Decrease in Ultraviolet and Total Radiation with Usage of Quartz Mercury Arc Lamps W T Anderson Jr Newark N J—p 603
 Sunshine for Therapeutic Use M J Dorcas Cleveland—p 605
 Practical Therapeutics Simple Formula for Bismuth Salicylate Suspensions J L Wollheim New York—p 609
 Case of Extreme Emaciation in Infant S J Turcotte Willimantic Conn—p 609

Medical Journal and Record, New York

133 152 (Jan 7) 1931

- Unemployment and Tuberculosis Preventive Medical and Legal Measures S A Knopf New York—p 1
Healing of Peptic Ulcer with Niche by Medical Means M Einhorn New York—p 6
Relation of Tissues to Endocrine Growth Inhibitors L Berman New York—p 7
Systematized Rest Measures J M Taylor Philadelphia—p 10
Slipshod Roentgen Ray Dosage J Tierstein New York—p 11
Insulin Edema I H Marcus Brooklyn—p 12
Sciatica W E Fitch Bedford Pa—p 13
Environmental Factors and Schizophrenia H S Sullivan New York—p 19
Man's Belief in Sympathetic Magic and Tabu E J Kempf New York—p 22
Epilepsy L P Clark and K Cushing New York—p 27
Factors Predisposing to Psychopathologic Conditions N B Hersloff Washington D C—p 31
Cutaneous Medicine and Surgery I Normal Skin Nail and Hair H Goodman New York—p 36

133 53 104 (Jan 21) 1931

- Mother's Milk Bureau of Children's Welfare Federation H D Chapin New York—p 53
Kinship of Rheumatic Fever and Rheumatoid Arthritis V Coates Bath England—p 55
Mental Hygiene G B Lake Chicago—p 56
Probable Origin of Man's Belief in Sympathetic Magic and Tabu E J Kempf New York—p 59
Respiratory Diseases and Teeth W Lintz Brooklyn—p 62
Evaporated Milk for Infant Feeding J A Tobey New York—p 63
Food Prejudices T S Harding Mount Ranier Md—p 67
Eczema from Modern Viewpoint Its Investigation Prevention and Rational Treatment M B Sulzberger and F Wise New York—p 71
Electrochemical Therapy for Exogenous Alopecia P Alexander Los Angeles—p 74
Dermatosis Papulosa Nigra Cases F A Diasio New York—p 77
Role of Heredity in Psoriasis H D Miles New York—p 80
Surgical Procedures in Repair of Skin Defects J W Maliniak New York—p 82
Radiation Therapy in Diseases of Skin P E Bechet New York—p 84
Electrosurgery in Surface Lesions Advantages Over Other Methods H M Herring New York—p 85
Treatment of Urethral Stricture J W Visser Evansville Ind—p 87
Antistreptococcal Serum in Treatment of Usher Abscess J Woroshilsky, Odessa—p 87
Unusual Case H S Coddard Vancouver Wash—p 87
Three New Diagnostic Signs M D Bloomfield Philadelphia—p 87
Laxatives Ancient and Modern H B Kellogg Chicago—p 88

Michigan State M Soc Journal, Grand Rapids

30 160 (Jan) 1931

- Group Practice of Medicine W L Finton Jackson Mich—p 3
Internist's Conception of Bronchial Asthma F R Menagh Detroit—p 6
Bovine Tubercle Bacilli in Humans C A Ryan and M Voldrich Detroit—p 11
Tuberculosis in Children H D Chadwick Detroit—p 15
Diagnosis and Treatment of Pulmonary Tuberculosis in Childhood D Bud on Ann Arbor—p 19
Callstone Intestinal Obstruction G J Curry Flint—p 24
Medical Impressions of Soviet Russia J E G Waddington Detroit—p 25
Cuts Marmorata or Livedo Reticularis (Marble Skin) N E Aronstam Detroit—p 28
Michigan's Department of Health C C Slemons Lansing—p 30

Bovine Tubercle Bacilli in Man—Twenty-five strains of tubercle bacilli isolated from tuberculous lesions in twenty-two children and three adults were typed by Ryan and Voldrich who used the traditional criteria type of growth, acid production, and pathogenicity for rabbits. Although all the strains were recovered from the type of lesions in which the incidence of bovine bacilli is usually high none of the twenty-five strains were found to be typical bovine bacilli.

Military Surgeon, Washington, D C

68 1152 (Jan) 1931

- Industry and National Defense G Van Horn—p 1
Medical Department of National Guard W A Bigham—p 8
Modern Dietetics M H Epstein—p 17
My Native Practice H J Banton—p 24
Spinal Anesthesia at Station Hospital Fort Sam Houston Texa H W Jones—p 29
Relief Work in Santo Domingo Disaster I W Johnson—p 34
Foreign Body in Right Bronchus Not Shown by Roentgen Ray P D McNaughton—p 56
Evaluation of Efficacy of Calomel Ointment for Venereal Prophylaxis M Ashford—p 57
Food Poisoning J E Hume—p 60
Slow Promotion P M Ashburn—p 73

New England Journal of Medicine, Boston

203 1273 1320 (Dec 25) 1930

- *Blood Cholesterol Values in Hyperthyroidism and Hypothyroidism Significance R L Mason Council Bluffs Iowa H M Hunt and L Hurvathal Boston—p 1273
Duration of Breast Feeding J Garland and M B Rich Boston—p 1279
*Dilution and Concentration Test of Renal Function 100 Cases R W Buck Boston and S H Proger Heidelberg—p 1283
Diverticulosis of Appendix Two Cases J D Stewart Boston—p 1288
*Osteomyelitis in Infant Unusual Case A G Rice and P G Corliss Springfield Mass—p 1290
*Routine Bacterial Examinations in Laparotomies P H Leavitt Brockton Mass—p 1291

204 148 (Jan 1) 1931

- Denervation and Displacement of Ureter for Kidney Colic T A Hepburn Hartford Conn—p 1
Nonmalignant Tumors of Rectum W M Shedden, Boston—p 5
Suicide A W Stearns Billerica Mass—p 9
Medical Examiner and Relation of His Work to Workmen's Compensation Act F D Donoghue Boston—p 11
Group of Medical Legal Cases from Routine of General Pathologist C F Branch Boston—p 15
Medical Testimony A A Lucier Esq Nashua N H—p 19
Surgical Diseases of Pancreas J P Bowler and J F Gile Hanover N H—p 25

204 49 94 (Jan 8) 1931

- Failure in Operative Treatment of Inguinal Hernia E M Fitch Claremont N H—p 49
Control of Arthritis R B Osgood Boston—p 55
Mental Hygiene as Applied to College Freshman E A Sullivan Cambridge Mass—p 62
Psittacosis G W Anderson Boston—p 67

204 95 142 (Jan 15) 1931

- Radiation Treatment of Toxic Goiter I Gerber Providence R I—p 95
Motion Pictures Demonstrating Application of Physical Therapy to Certain Orthopedic Cases H D Corbuser Plainfield N J—p 101
Diseases of Esophagus A S MacMillan Boston—p 104
Indications for Use of Electrosurgical Methods W L Clark Philadelphia—p 110
Social Significance of Ten Year School Clinic Program for Children in Massachusetts F Kiernan Boston—p 116
Pregnancy Complicated by Tabes J T Williams Boston—p 119

Blood Cholesterol Values in Hyperthyroidism and Hypothyroidism—Cholesterol values on seventy patients with thyroid disturbances are reported by Mason et al. Hyperthyroid conditions tend to diminish the level of the cholesterol in the blood. The lowest values are found in extremely toxic patients. There is however no definite correlation between the cholesterol value and the basal metabolic rate. True myxedema is accompanied by a marked elevated blood cholesterol. Low metabolic rates however, without clinical evidence of myxedema are accompanied by normal cholesterol values. Cholesterol values are a definite help in estimating the gravity of hyperthyroidism. Cholesterol values are important aids in diagnosis and prognosis and in estimation of response to treatment in patients with hypothyroidism. Possible coincident effects of disordered cholesterol metabolism are suggested.

Dilution and Concentration Test of Renal Function—The dilution and concentration test of kidney function has been performed by Buck and Proger in a hundred patients and compared with other tests of renal function. The advantages of the dilution and concentration test are its sensitivity, its ease of performance, no special laboratory equipment or technical ability being required, its adaptation to the ambulatory patient, and the possibility of its combination with other tests if necessary.

Osteomyelitis in Infant—A case of extensive osteomyelitis involving the left humerus in a girl baby aged 5 weeks is reported by Rice and Corliss. The condition followed multiple abscesses in the lactating breast of the infant. Operation was followed in less than twenty-four hours by death.

Routine Bacterial Examinations in Laparotomies—Leavitt recommends that cultures be taken in all cases in which there is free fluid in the abdominal cavity. Occasionally important information will thereby be obtained and the burden of the cause of death will be placed where it belongs. What is a simple routine may be the means of satisfactorily explaining to relatives and friends a situation that has often been the cause of criticism. It may relieve the surgeon of responsibility for an unfavorable result.

New Orleans Medical and Surgical Journal

83 437 506 (Jan.) 1931

- Old Time Country Doctor and Today's Specialist G A McBride Jackson Miss—p 437
- Surgery of Ovary M J Gelpie New Orleans—p 441
- Upper Left Abdominal Tumor Mass in Children Differential Diagnosis S L Brister Jr Greenwood Miss—p 445
- *Meningococcemia for Eight Months Following Meningitis Recovery I I Lemann New Orleans and H E Tersley Atlanta Ga—p 448
- Influenzal Meningitis is Amenable to Treatment C J Bloom New Orleans—p 455
- Hemorrhagic Disease of New Born as Cause of Sudden Death Three Cases of Visceral Hemorrhages J Signorelli New Orleans—p 467
- Mastoiditis as Causative Factor of Ileocolitis and Bronchopneumonia J R Fernandez Wallace La—p 474
- Paranasal Sinus Disease in Infants and Children J D Simmons Gunnison Miss—p 481
- Sinus Disease in General Medicine M F Meyer New Orleans—p 484

Meningococcemia for Eight Months Following Meningitis—A case of meningococcal septicemia of an unusual type following acute meningitis is reported by Lemann and Tersley. Recovery followed the use of autogenous vaccines but their value is uncertain. Of great importance is the fact that a brother and a sister of the patient had died of meningitis respectively fifteen and six years previously.

Influenzal Meningitis Is Amenable to Treatment—The records of 302 cases have been reviewed by Bloom including ten cases that he observed. All literature published in the United States and some in foreign countries up to March, 1930, is reviewed. The mortality in 302 cases was 92.05 per cent. Seven additional cases of recovery are added to the table of Rivers (1922), including one by the author. Influenzal meningitis is a disease of infancy, as statistics prove. The relationship between the seasonal and the yearly incidence of influenzal meningitis and of epidemic influenza and pneumonia do not coincide, though this series occurred somewhat later than that reported by others. The report of a case treated with human convalescent blood serum, with recovery and no aftermath, should be an inspiration for further study and continued usage.

New York State Journal of Medicine, New York

31 146 (Jan. 1) 1931

- Vesical Outlet Obstruction C W Collings New York—p 1
- Visceral Neuroses C F Tenney and W H Squires New York—p 5
- Congenital Syphilis Manifestations and Treatment E D Osborne and E D Putnam Buffalo—p 18

Northwest Medicine, Seattle

30 154 (Jan.) 1931

- Paranasal Sinus Infection Relation to Some Local and Systemic Diseases C W Pond Pocatello Idaho—p 1
- Meningitis of Otic Origin T A Plum Honolulu HI T—p 5
- Commoner Ear Diseases R B Stephenson, Central Wash—p 10
- Meningitis Bullosa Symptoms and Etiology E V Ullmann Corvallis Ore—p 14
- Head Injuries of Moderate Degree One Hundred Cases G W Swift Seattle—p 16
- New Technic in Adenoidectomy M C Findley Salem Ore—p 19
- Separation of Upper Femoral Epiphysis Ten Cases C F Eikenbary and J F LeCocq Seattle—p 22
- Hendon Key J F Scott Yakima Wash—p 26
- Hemolytic Streptococcal Gangrene A C Brettman Portland Ore—p 28
- Non-surgical Treatment of Piles Simple Office Procedure B R Brooke Portland Ore—p 32
- Intravenous Urography by Means of Urosclectan O A Nelson Seattle—p 34
- Simple Procedure for Photographing of Roentgen Ray Plates J J Markey Seattle—p 35
- Health Education C B Langton Corvallis Ore—p 36

Oklahoma State Medical Assn Journal, Muskogee

24 132 (Jan.) 1931

- Traumatic and Inflammatory Brains—Pneumographic Demonstration of Some After Results C R Rayburn Norman—p 1
- Localization of Spinal Cord Tumors N R Smith Tulsa—p 8
- Compression Fractures of Spine I W Bollinger Henrietta—p 11
- Osteochondritis Deformans Juvenilis S R Cunningham Oklahoma City—p 13
- Fracture of Neck of Femur in Aged E D McBride Oklahoma City—p 15
- Low Back Pain E Margo Oklahoma City—p 16
- Granulocytic Anemia with Recovery D O Smith Tulsa—p 19

Pennsylvania Medical Journal, Harrisburg

71 223 290 (Jan.) 1931

- Cataract Extraction A Knapp New York—p 223
- Precancerous Dermatoses S Crawford Pittsburgh—p 225
- Thyroid Gland in Retrospect F Fritman Frie—p 230
- Diagnosis of Hyperthyroidism R R Snowden Pittsburgh—p 231
- Therapeutic Use of Thyroid Derivatives E Rose, Philadelphia—p 235
- Difficulties in Diagnosis of Impyema in Children A L Pave Harrisburg—p 239
- Koenig's Diagnosis of Impyema G W Grier Pittsburgh—p 242
- Treatment of Impyema Thoracis H R Decker Pittsburgh—p 244
- Celiac Disease Treated with Dennett's Diet D F Berney Scranton—p 250
- Spasmodic Convulsions Followed by Spastic Hemiplegia C H Phillips Wilkes Barre—p 251
- Acute Obstruction of Large Intestine Suppurative Appendicitis and Lobar Pneumonia T S Munzer Clearfield—p 251
- Encephalitis as Sequel of Measles J C Atwell and R. S. Lucas, Butler—p 253
- Tuberculosis of Pons Cerebri C J Feldstein Pittsburgh—p 253
- Intestinal Obstruction (Partial) Acute Nephritis and Acute Splenitis R R Spahr Mechanicsburg—p 255
- Diabetes Mellitus in Infant Eleven Months Old E G Shelley, North East Pa—p 256
- Mediastinal Lymphosarcoma in Infant Ten Months Old W F Mayer Johnstown—p 257

Celiac Disease Treated with Dennett's Diet—Berney has treated four cases with Dennett's diet of fat free butter, milk and baked potatoes and arrowroot in rather enormous quantities. One patient aged 9 months, weighing 11 pounds (5 kg), with a history of recurrent diarrhea during the past six months and a loss of weight, had been fed on condensed milk since birth and during the past three months had been given soups and crackers. His appetite was poor. The stools were typical of intestinal decomposition. The abdomen was slightly distended and the diagnosis of intestinal decomposition was made. The usual diet for this condition was ordered. Three months later the child now being 1 year old and weighing 12 pounds 14 ounces (5.8 Kg), the clinical picture had changed. The abdomen was enormously distended. The liver and spleen were not palpated there was no movable dullness. The superficial glands were not enlarged the reflexes were normal. The stools were frequent and voluminous, from four to six a day. They were frothy gray, with a somewhat greasy appearance. Pirquet and Mantoux tests were negative and the hemoglobin was 65 per cent. Marked dilatation of the transverse and descending colon was evident from roentgen examination. The patient had been on protein milk for three weeks and been given five intraperitoneal injections of 100 cc of citrated blood, without any apparent change in his condition. He was given eight feedings daily of 8 ounces each of fat free buttermilk. Two days later he was given 8 ounces of buttermilk every two hours, or 96 ounces in the twenty-four hours. Some days, not being satisfied, he was given as much as 112 ounces. This was continued for sixteen days by which time the stools were two or three a day, rather small and well formed, the abdominal distention was less marked and the disposition was improved. He gained 7½ ounces in this period and was standing up in bed for the first time. Then half of a baked potato was given twice a day, which was increased to a whole potato twice a day, the following day and gradually increased until three weeks later he was getting fourteen baked potatoes daily, at which time buttermilk was reduced to 64 ounces a day and later to 48 ounces. The potatoes were steadily increased until he was taking eagerly thirty five potatoes a day (by weight 8 pounds 4 ounces), practically a bushel of potatoes in one week, and having two or three normal stools daily. In this period of less than three months he gained 4 pounds and started to walk, the muscle turgor being much improved.

Philippine Islands M Assn Journal, Manila

10 457 498 (Nov.) 1930

- *Morbidity and Mortality Among Nonleper Children in Culion Leper Colony B De Vera Culion—p 457
- Progress of Leprosy Treatment at Culion Leper Colony C B Lara Culion—p 469
- Lepra T Dychitan Mindoro—p 481
- Improvements in Sanitation in Public Schools of Philippine Islands Since 1925 R Villafranca and T Corpus Manila—p 487

Mortality Among Nonleper Children in Culion Leper Colony—The morbidity and mortality among the children of lepers born in the Culion Leper Colony have been studied by De Vera with the main object of determining whether or not

the improved general and medical care of the lepers consequent on the intensification of antileprosy treatment, which began in 1922, and the giving of artificial feeding to most of the newborn babies since 1928 have had an appreciable influence on the health of these children. From 1922 to 1926 the commonest causes of illness among the children in the colony, according to the order of frequency, were respiratory disorders, leprosy, gastro-intestinal disturbances, beriberi, malnutrition, skin diseases, congenital debility and tuberculosis. In the last three years, gastro-intestinal disturbances, respiratory disorders, skin diseases, beriberi, malnutrition, tuberculosis, influenza and malaria were the commonest causes of illness in the order mentioned. In the nursery the most frequent complaints for the period from 1922 to 1926 were skin diseases, influenza, gastro-intestinal disturbances, measles, respiratory disorders, dengue(?), varicella, leprosy and tuberculosis. From 1927 to 1929 the order of frequency of the commonest complaints was gastro-intestinal disturbances, skin diseases, respiratory disorders, influenza, malnutrition, conjunctivitis, malaria and otitis media. Aside from leprosy and the absence of specific water and filth borne diseases the causes of illness were what might be expected among children living in nonleper communities in the Philippines. The incidence of leprosy among both colony and nursery children was much higher during the period from 1922 to 1926 than from 1927 to 1929 this was due to the fact that during the former period many of the children had been exposed to infection for several years while since 1927 the children have regularly been removed from contact with their parents at a progressively younger age. Since 1928 no new cases have been reported among the children born in the colony. Cases of malnutrition have apparently become more frequent, especially in the last two years, coinciding with and probably due to the giving of artificial feeding with sweetened condensed milk to most of the new born infants. There has been a slight lowering of the incidence of congenital debility since the intensification of leprosy treatment. The marked lowering of the infant mortality since the intensification of antileprosy treatment has probably been due to improved medical and general care of the lepers and their children. From 1906 to 1921 the chief causes of death in the order of their importance were congenital debility (including malnutrition and premature birth), gastro-intestinal disturbances (diarrhea and enteritis), infantile convulsions, the pneumonias and infantile beriberi. From 1922 to 1929 the order of importance of the chief causes of death was gastro-intestinal disturbances, bronchopneumonia, tuberculosis, infantile beriberi, congenital debility and malnutrition.

Leprosy Treatment at Culion Leper Colony—The results of leprosy treatment at Culion as reported by Lara presented in the foregoing account, should suffice to demonstrate that a large proportion of advanced cases can be and have been successfully treated.

Lapnus—Dychitan states that lapnus is a local term for a disease prevalent in the province of Mindoro heretofore diagnosed as malaria with eczema. It means the peeling of the skin similar to that which occurs after an incident of burning. This external sign characterizes the disease and it is manifested in all those who suffer from it hence it can be considered the pathognomonic sign of the disease. The disease prevails during March, April, May, June, July and August and disappears in September these months coincide with the period at which the rice called *tipucay garangan* has already been stored for several months without previous drying because the rains precluded its exposure to sun and the places are low and damp. Dychitan believes that the rice *tipucay garangan* improperly dried, is the main cause of the disease a predisposing cause is poverty which does not permit the use of other kinds of food and so favors the production of the disease. Hygiene and sanitation do not seem to be factors in the production of the disease. The fact that those who did not contract the disease are those who had the good fortune to sell their cereals and therefore were able to live in that year without being exposed to its ravages further confirms its metabolic or nutritional origin. The disease is not influenced by age or sex. The mortality is from 50 to 60 per cent approximately. Dychitan is inclined to believe that lapnus is a disease similar to the European pellagra. The treatment he used consisted in the administration of saline purgative intestinal disinfectants sea

water with lemon juice and solution of potassium arsenite. It was effective. The sense of smell was normal in all the patients. Vision was defective when opacity of the cornea was present. The movement of both eyes was normal. The sense of feeling was normal. Locomotion was normal so long as there was no lesion on the soles of the feet as a result of the peeling of the skin, which began at the tip of the feet. There was slight deafness, otherwise the sense of hearing was normal. The mental condition was slow. Melancholia was manifested in advanced cases but without signs of illusion or hallucination. Of great importance was the symmetrical appearance of the lesions. Alopecia is also a common symptom among the patients. The hair falls out gradually, to complete baldness.

Public Health Reports, Washington, D C

46 143 (Jan 2) 1931

*Leptospirosis Ictero-haemorrhagiae J R Ridlon—p 1
National Leper Home (United States Marine Hospital) Cuyville La
O E Denney—p 5

46 45 97 (Jan 9) 1931

Tularemia in British Columbia R R Parker—p 45
Life Insurance Mortality Rates of Rejection of Applicants on Basis of
Medical Examination R H Britten—p 46

46 99 147 (Jan 16) 1931

Age Incidence of Communicable Diseases in Rural Population E Siden-
stricker and S D Collins—p 100

Leptospira Ictero-haemorrhagiae—Several thousand rats are examined monthly at the federal laboratory, San Francisco. *Leptospira* was found by dark-field examination by Ridlon in the kidneys of seventeen rats, or about one third of the total. These organisms apparently conform to the descriptions of *Leptospira ictero-haemorrhagiae*. Guinea pigs were inoculated with material from the kidneys of rats harboring *Leptospira* and died, showing fever and jaundice of the eyes and skin before death. At necropsy they showed subcutaneous jaundice and hemorrhages of subcutaneous tissues and internal organs, which are the gross pathologic changes described by several writers as typical of infection with *Leptospira ictero-haemorrhagiae*. *Leptospira* was found in the internal organs and urine of infected guinea pigs. Positive cultures were obtained. Guinea-pigs were infected by injection of positive cultures. The disease was carried over in successive guinea pig inoculations, both from original rat injections and from culture injections.

Southern Medical Journal, Birmingham, Ala

24 192 (Jan) 1931

Future Relations of Medical Profession to Public H S Cummins
Washington D C—p 1

Relationship of Medicine and Surgery M W Ireland Washington
D C—p 5

*Indigestion Which is Best Treated Medically W C Alvarez Rochester
Minn—p 9

Endocrine Disturbances in Childhood F B Talbot Boston—p 13

*Thyroid in Gynecic Practice Menorrhagia W R Cooke Galveston
Texa—p 20

*Human Ovary at Laparotomy E Allen I J Mand Columbia Mo
J P Pratt Detroit and O L Newell St Louis—p 23

Trends in Health Conservation T Parran Jr Albany N Y—p 26

Indications and Contraindications for Operating on the Labyrinth J R
Page New York—p 31

Armistice Day S McGuire Richmond Va—p 35

Ephraim McDowell I F Burch Nashville Tenn—p 36

Ephraim McDowell Pioneer and Physician W C Morgan Washing-
ton D C—p 39

Ephraim McDowell F J Underwood Jackson Miss—p 41

Surgery of Biliary Tract E S Judd and A H McIntosh Rochester
Minn—p 42

Relationship of Neuropsychiatry to General Medicine and Surgery
R F Gayle Jr Richmond Va—p 45

Nutritional Research in South R F Remington Charleston S C
—p 49

Repair of Large Skin Defect Leg Ulcers B Douglas Nashville
Tenn—p

Tularemia Two Cases Due to Tick Bite C Hastings Tulsa Ok-
ark—p 5

Indigestion That is Best Treated Medically—Alvarez states that the wise physician will not advise operation on all the patients with indigestion who appear to have functional troubles or who have signs of mucous colitis or who have been operated on several times before or who have only recent signs of organic disease or who have not been studied carefully. He will avoid operations on patients with migration of the c

who are psychopathic or constitutionally inadequate to the strain of life, and on those who are worn out with overwork, insomnia, or worry. He will not always advise operations even when he knows that the patient has gallstones or duodenal ulcer but will try to pick out only those patients who are likely to be benefited by the work. The finest thing that can be said of a surgeon is that he operates not to remove a lesion but to restore the patient to health. The finest things that can be said of a gastroenterologist are that he does not hang on indefinitely to patients who should be in the surgeon's hands and that he does not call in a surgeon solely to save himself from diagnostic labor.

Thyroid in Gynecic Practice Menorrhagia—Cooke asserts that menorrhagia, sterility and abortion (separately or in combination) occur as symptoms in certain cases of hypothyroidism. A considerable percentage of these symptoms are apparently relieved by the administration of thyroid, and by no other as yet discovered means. The administration of thyroid in such cases does no harm especially (although not necessarily) when regulated by observations of the basal metabolic rate.

Human Ovary at Laparotomy—Five human ova were recovered by Allen et al from the uterine tubes and definitely identified. Ovulation time in these cases occurred on or one or two days before the fourteenth day following the onset of the previous menses. One mature ovum was recovered from a 10 mm follicle on the fourteenth day of the cycle. The pre-ovulation size of the human follicle may be at least 10 mm in diameter. The human ovum forms the first polar body and the second maturation spindle before ovulation and remains in this stage after ovulation unless fertilized. A majority of the large follicles visible on the surface of the ovary (although apparently normal) prove on examination of the enclosed ovum to be atretic. Considerable amounts of follicular hormone (theelin, 'estrim', folliculin) can be demonstrated by injections and implants into test animals of fresh tissue from both follicles and recent corpora lutea. Corpora lutea of the first few months of pregnancy contain considerable amounts. Corpora of full term pregnancy contain little or none of this hormone, which is, however, abundant in the placenta.

Southwestern Medicine, Phoenix, Ariz

14 561 604 (Dec.) 1930

- Tumors of Female Breast W T H Baker Pueblo Colo—p 561
- Hysterectomy Analysis of 604 Cases E C Moore and D G Jollefsen Los Angeles—p 565
- Kidney Disease F M Heller Pueblo Colo—p 570
- Ophthalmic Gout Treatment of Serious Postoperative Abdominal Conditions Osteo-Arthritis Compression Fractures of Vertebra W L Brown and C P Brown El Paso Texas—p 574
- Pleurisy with Effusion in Pulmonary Tuberculosis S R King El Paso Texas—p 576
- Rest for Worn Lung—Postural Rest and Artificial Pneumothorax L W Phillips Phoenix—p 580
- Relapsing Fever Fchris Recurrens Ruckfallfeber Spirillum Fever Tick Fever K Bannister Phoenix—p 581
- Ureteral Stone Simulating Acute Appendicitis W O Sweet and G C French Phoenix—p 582

Tennessee State Medical Assn Journal, Nashville

24 140 (Jan.) 1931

- Cavernous Sinus A C Lewis Memphis—p 9
- Supervening Accident in Major Surgical Operation Narrative Case Report B Burns Memphis—p 12
- Local Manifestations of Systemic Conditions H E Christenbury Knoxville—p 15
- Eye Injuries S M Herron Jackson—p 19
- Physician of Yesterday and Tomorrow M B Davis Nashville—p 23

Texas State Journal of Medicine, Fort Worth

26 547 618 (Dec.) 1930

- Liver Dysfunction Diagnosis and Treatment A Eustis New Orleans—p 553
- Reactions Following Administration of Arsenic G A Gray Abilene—p 559
- *Acute Indigestion in Middle Aged W E Nesbit San Antonio—p 562
- *Repair of Hernia with Fascial Sutures J H McCracken Jr Dallas—p 564
- Local Anesthesia in Oblique Inguinal Hernia L W Pollok Temple—p 567
- Extra-Uterine Abdominal Pregnancy Delivery of Living Baby T F Bunkley and G V Brindley Temple—p 571
- Radium in Superficial Face Lesions W A Chernosky Temple—p 575
- Relative Value of Roentgen and Radium Therapy R H Crockett San Antonio—p 578

- Need of More Conservative Roentgen Dosage in Skin Disease W F Spiller Galveston—p 582
- Cancerous Moles S J Wilson Fort Worth—p 584
- Treatment of Ethmoiditis C R Hartsook Wichita Falls—p 586
- Acute and Chronic Sphenoid Sinusitis with Ophthalmic Complications. B P Woodson Temple—p 589
- Health Education in Public Schools M H Jensen Sweetwater—p 593

26 619 694 (Jan.) 1931

- Bone Tumors H O Smith Marlin—p 627
- Lung Abscess J W Nixon San Antonio—p 633
- Massive Collapse of Lung Case G S McKeynolds Temple—p 636
- Trifacial Neuralgia C H Harris Fort Worth—p 639
- Hopfulness in Cure of Early Diagnosed Tuberculosis J B McNight Sanatorium—p 643
- Failing Heart of Later Middle Life W G Reddick Dallas—p 646
- Chronic Ulcerative Colitis M O Rouse Dallas—p 649
- Vaccine Therapy in Respiratory Infection J H Black Dallas—p 657
- Vaccines in Clinical Practice M D Levy Houston—p 655
- Climate Factor in Paranasal Sinusitis S A Schuster and F P Schuster El Paso—p 657
- Diphtheritic Otitis Media and Mastoiditis Cases E T Stroud Corpus Christi—p 662
- Uterus Duplex Separatus Presenting Variation in Differential Diagnosis of Acute Appendicitis C A Iondexter Crystal City—p 665
- Chemical Blood Studies in Cholera H O Nichols H W Johnson and R A Johnston Houston—p 665
- Prelitis in Pregnancy D D Wall San Angelo—p 668
- Vaginal Hysterectomy and Relation to Uterine Lesions J W Kennedy Philadelphia—p 670
- Salient Points Concerning Collecting and Sending Specimens to Laboratory S W Bohls Austin—p 673

Acute Indigestion in Middle Aged—Nesbit says that the family physician in the general practitioner is the really important member of the medical profession. The family physician sees the patient first. In ninety-nine out of a hundred cases the patient will do what his family physician advises. Let the family physician insist that his patients in the fifth and sixth decades come to him at least once a year for a general physical survey. If he finds some condition requiring further study for which he is not prepared by lack of time or equipment, let him call in the internist. The internist should be glad to work with the family physician in such a way as not to stand in the light between the physician and his patient. The surgeon will profit by not having suddenly without warning, to operate in a some what atypical upper abdominal condition only to find no intra-abdominal disease, and to have an unexplained death on the operating table or a few days later.

Repair of Hernia with Fascial Sutures—McCracken reports on approximately 400 fascial repairs for hernia which he says seem indicated in the following types of cases: (1) direct inguinal hernia, (2) oblique inguinal hernia with a sagging posterior wall in patients past middle age, (3) femoral hernia in which the suture is used to close the entrance of the femoral ring through the inguinal incision, (4) all recurrent hernias and (5) all ventral hernias including umbilical and epigastric. The sutures are taken from the fascia lata of the thigh, each being one fourth inch wide and as long as the particular thigh will allow. They are threaded on a special needle and used as ordinary sutures in doing the plastic repair. One direct hernia recurred at the end of one year, in one case of double recurrent hernia there was recurrence on one side fifteen months after operation.

Extra-Uterine Abdominal Pregnancy Delivery of Living Baby—In the case reported by Bunkley and Brindley there were several interesting points. There was no bloody discharge at any time during pregnancy, the condition of the mother was excellent generally. She was apparently in perfect health with all organs functioning properly, the baby was in perfect condition weighing over 9 pounds and apparently normal in every way, the mother recovered rapidly, leaving the hospital in seven teen days feeling fine and the wound entirely healed. The mother and baby were both doing nicely seven months later, and the baby was developing normally.

United States Naval Med Bulletin, Washington, D C

29 1189 (Jan.) 1931

- Relief Work in Santo Domingo Disaster L W Johnson—p 1
- Roentgen Demonstration of Calcified Filaria Bancrofti in Human Tissue. F W O Connor R Golden and H Auchincloss—p 17
- Lowered Basal Metabolism Causes and Significance J J McCartney—p 25
- Studies of Dermatophytes Experimental Inoculations of Monkeys and Guinea Pigs with Dermatophytes and Blastomycoides C W Dowling—p 48

United States Vet Bur M Bull, Washington, D C

7 1110 (Jan) 19 1

- Anaphylaxis R S Alvarez —p 1
*Atelectasis E Korol —p 10
Sodium Amytal as General Anesthetic C A Thompson —p 21
Malaria Treatment of Neurosyphilis Cases R C Robertson —p 25
Rocky Mountain Fever Tick J E Fahy —p 33
Prognosis in Mental Diseases Extramural Social Adjustment H C Podall —p 39
Foreign Bodies in Gastro-Intestinal Tract of Psycho-ic Patients H J Kellum —p 50
Occupational Therapy in Hospitals for Mentally Ill H Hansen —p 53
Injurious Effects of Tobacco on Tuberculous Patients J C Herrick —p 56
*Retinal Arteriosclerosis Without General Arteriosclerosis in Cases Diagnosed as General Arteriosclerosis Incidence D Ballou —p 60
Ward Administration in Care of Semi-Infirmity Tuberculous Patients L H Piles —p 66
Exercise in Convalescence from Pulmonary Tuberculosis J Breslin —p 72
Alloy J F Chancy —p 76
Subarachnoid Lavage and Ethylhydrocupreine in Meningitis H Mella —p 77
Progressive Bulbar Palsy W A Ellison —p 79
Liver Feeding in Osteitis Fibrosa Cystica and in Organic Neurologic Conditions M H Wilkinson —p 82
Atonic Colitis as Complication C M Gehring —p 85
Inexpensive but Practical Scoliometer W H Conner —p 88
Hamper for Continuous Baths J T Arwine and J I Immel —p 91
Follow Up Nursing Visits M Berwick —p 92
Physiotherapy and Occupational Therapy H J Kefauver —p 95
Occupational Therapy Assignments E D Piper —p 95
Vitamins Source and Value in Diet F M O'Brien —p 97

Atelectasis—Ten cases are described by Korol three of aortic aneurysm, two of mediastinal tumor, two of leukemia two of Hodgkin's disease involving the mediastinal or hilar glands, and one of postoperative massive atelectasis. In certain cases treated by roentgen rays or radium, the signs of atelectasis disappeared, following a diminution of the size of the mediastinal masses. A short review of the literature indicates that aneurysm and mediastinal tumor have been recognized as causes of atelectasis, but there are no references in the literature to atelectasis accompanying Hodgkin's disease and leukemia. The occurrence of bronchiectasis in atelectasis is discussed including the symptom complex resulting from interference with bronchial drainage.

Sodium Amytal as General Anesthetic—Thompson is of the opinion that sodium amytal should be seriously considered as an anesthetic in certain types of patients coming to United States veterans hospitals for treatment.

Malaria Treatment of Neurosyphilis—All nine cases reported by Robertson have shown a marked mental improvement following malarial therapy. Some of the patients are earning a living at former occupations; others are working at occupations of a simpler character and all have made a fair social adjustment. In those cases in which a spinal fluid examination was made at conclusion of the treatment a distinct improvement of the condition observed before treatment was noted. The greatest improvement in cerebrospinal fluid was observed in the colloidal gold reaction and in the cell count. There seemed to be little change in globulin or in the spinal fluid Wassermann reaction. There was no change in the blood Wassermann tests. The speech defect in some cases seemed to improve. There appeared to be the greatest improvement in the manic type of patient. It is thought that malarial therapy is justified because of its simplicity of technique, the fact that it is easily controlled, its relative harmlessness, and the fact that it produces the greatest percentage of improvement in cases of dementia paralytica.

Prognosis in Mental Diseases Extramural Social Adjustment—Podall reviews some of the common forms of mental diseases in reference to the social and economic adjustment of patients suffering from them. The constitutional psychopath due to abnormal make up usually makes a poor adjustment. The dementia praecox (catatonic form) patient on account of having prolonged remission periods without mental deterioration has more likelihood of social adjustment than one with the hebephrenic form which is characterized by progressive mental deterioration usually necessitating hospitalization. During the periods of remission in the manic-depressive group many individuals are able to be employed; others on account of frequent recurrent attacks are indefinitely hospitalized. Patients with dementia paralytica who received

malarial treatment showed varying results as regards social adjustment. There was a marked physical and mental improvement in a number. Some were at home and employed, while others were unemployed, again, there were patients who remained in the hospital, showing no mental improvement. While the malarial treatment does not cure dementia paralytica, he believes that better results will be obtained after the public at large has been sufficiently educated as to the importance of early and prolonged treatment for any form of mental disease, especially in dementia paralytica and that it is for the best interest of these patients to remain in the hospital until such time as they can be discharged as improved and not against medical advice. He emphasizes the importance of cooperation between the patient, relatives, social service and the medical profession not only in cases of dementia paralytica but in all other forms of mental diseases.

Retinal Arteriosclerosis, Without General Arteriosclerosis in Cases Diagnosticated General Arteriosclerosis—Ballou discusses the striking frequency of retinal arteriosclerosis occurring incidental to cerebral arteriosclerosis especially as compared with generalized arteriosclerosis and other peripheral forms of arteriosclerosis.

Subarachnoid Lavage and Ethylhydrocupreine in Meningitis—This drug is recommended by Mella. The preparation of choice in meningitis should be the hydrochloride to be used in solution for irrigating the subarachnoid space, but the reason for not following that procedure in this case has been stated. It is believed though that, by administering the base early in the progress of the disease and following this with the removal of spinal fluid at regular intervals, satisfactory results may be obtained. The hydrochloride must never be given by mouth and the base should not be used in the subarachnoid space. The drug should not be given for more than three days. A glass of milk should be given with each dose and no other food or medication must be given by mouth during the time covered by this treatment. If it is necessary to appease the appetite more milk may be given but no other food. Puncture of the cisterna magna should not be attempted except by those who have been instructed in the technique and should certainly not be attempted by any one believing that this technique can be acquired by simply reviewing the literature on the subject. However, when the technique is once acquired it will be found to be a great aid in the diagnosis and treatment of many different disorders of the central nervous system.

Liver Feeding in Osteitis Fibrosa Cystica and in Organic Neurologic Conditions—Osteitis fibrosa cystica is a bone disease which has received benefit in one case cited by Wilkinson by a purely dietetic treatment with liver which may be carried on at home as well as in the hospital. He urges that liver therapy should be given an exhaustive trial in all cases of organic neurologic conditions and in those conditions which show decalcification of bone. It is not known what the action of liver diet is but from the results clinically obtained and from laboratory examination it has a beneficial effect on such conditions.

Virginia Medical Monthly, Richmond

57 635 704 (Jan) 1931

- Cancer Education S Leigh Norfolk —p 63
Vitamin B Complex in Concentrated Aqueous Liver Extract A Chanut University Va —p 63
Prolapse of Vesical End of Ureter with Stone C I Seale Richmond —p 68
Vesical Calculus in Female W C Sterling Washington D C —p 640
Diarrhea of Infants S H Nixon Chiramanburg —p 642
Id R M DeHart Floyd —p 645
Ideal Appendectomy M B Hulen Warrenton —p 646
Dementia Praecox J K Gill Peterburg —p 648
Meningitis of Otic Origin Cases G B Trible and C J Browne Washington D C —p 650
Physical Diagnosis of Heart Disease O Swineford Jr University Va —p 654
Acute Infectious Mononucleosis H W Potter Newport News —p 664
Emergency Cystostomy for Relief of Urteral Obstruction T A Williams Norfolk —p 668
Nervous, Tired and Run Down Patient J P Glenn Washington D C —p 672
Postpartum Care of Confinement Case R H Woolling Pulaski —p 676
Eugenic Sterilization in Virginia J S DeLarnette Staunton —p 678
Complete Separation of Placenta Before Advent of Pains M C Newton Narrows —p 680

- Reaction Following Phenolsulphonphthalein Injection W S L McMann
Richmond—p 691
- Pregnancy with Complications. Premature Rupture of Membranes. Breech
Presentation. Episiotomy. Vagitus Uterinus. Hematoma of Perineum
D H Bessenes Minneapolis—p 682

West Virginia Medical Journal, Charleston

27 148 (Jan) 1931

- Roentgenographic Interpretation of Duodenal Deformities C C
McClure Cleveland—p 1
- Significance of Hematuria B S Abeshouse Baltimore—p 9
- Diagnosis and Treatment of Medritis R B Bailey Wheeling—
p 17
- Methylated Antigen in Treatment of Tuberculosis G F Evans Hope
mont and R S Spray Morgantown—p 20
- Tuberculosis and Family Doctor J E K Flannagan Salem Va—p 22
- Extra Uterine Pregnancy A G Rutherford Welch W Va—p 25
- Tularemia Fatal Case B S Preston Charleston—p 28
- Iopax (Uroselectin) G G Irwin Charleston—p 29
- Composite Odontoma in Presence of Syphilis A Hoge A L Jones
and E C Armbricht Wheeling—p 31

Methylated Antigen in Treatment of Tuberculosis—Forty-eight patients in varying stages of advanced tuberculosis were treated by Evans and Spray with the methylated antigen of Negre and Boquet adhering to the directions of preparation and routine administration as closely as possible. While the early results were somewhat suggestive, later developments failed to reveal any permanent beneficial response to one complete series of thirty-two injections. The procedure was applied elsewhere to forty guinea pigs and to seven monkeys, with no demonstrable results.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Tuberculosis, London

25 158 (Jan) 1931

- New English Sanatorium for British Patients in Switzerland T N
Kelnack and H Roche—p 1
- *Vernes Resorcinol Test in Diagnosis and Prognosis of Tuberculosis
J W Iobbin and J Smith—p 11
- Value of Iodized Poppy Seed Oil in Investigation of Intrathoracic Con-
ditions A Isle Punch—p 18
- *Symptomless Spontaneous Pneumothorax J R Beal—p 21

Vernes Resorcinol Test in Tuberculosis—On the basis of the results they obtained with the Vernes resorcinol test in twenty-eight cases of extrapulmonary tuberculosis and thirty-six cases of pulmonary tuberculosis Lobban and Smith state that the test cannot be regarded as specific for tuberculosis. In the sixty-four cases the serial tests corresponded with the clinical course of the disease in fifty nine, and hence a progressive decline in the figures obtained was found to be of good prognostic value. The serums from healed cases of tuberculosis whether pulmonary or nonpulmonary show readings below 30 and a Vernes reading below 30 is a good measure of the activity of the lesion. Nonpulmonary cases of tuberculosis generally show Vernes readings below those obtained in pulmonary cases. In cases of bone disease in which there is extensive destruction of the tissue the readings are, however, fairly high. The results obtained in cases of scarlet fever and diphtheria indicate that the amount of flocculation obtained varies with the stage and degree of severity of the illness.

Symptomless Spontaneous Pneumothorax—Beal records a series of six cases of symptomless spontaneous pneumothorax that have come under his notice. In none of the six cases under review was there a history of any exertion or sudden strain and the lesion was discovered in the course of the routine examination of patients known to have pulmonary tuberculosis. In none was there elicited a history of pain in the chest or dyspnea the patients being unaware that anything untoward had happened. In five cases the percussion note was impaired over the area of the pneumothorax, this being due to pleural thickening and adherent pleura. In one case the note was hyperresonant and the breath sounds were absent, but in the remaining cases breath sounds were of a soft, distant, amphoric type. Metallic rales were present in four cases. Fluid was present in three cases giving rise to a definite splash. Fluid was withdrawn in one case and on bacteriologic examination tubercle bacilli were found. Cardiac displacement occurred in two cases on the opposite side to the pneumothorax, but this was only about

1 inch from the normal position. The diagnosis of spontaneous pneumothorax was confirmed roentgenologically in five cases the other patient being too ill for the examination.

British Medical Journal, London

1 165 206 (Jan 31) 1931

- Spasms in Childhood Cause and Treatment A D Fordyce—p 162
- *Subphrenic Abscess W D Doherty and R P Rowlands—p 163
- Seasickness and Labyrinthine Theory T G Matland—p 171
- Seasickness M Flack—p 176
- Ketosis in Seasickness J R Marrack—p 178

Subphrenic Abscess—A review of the causes, symptoms and diagnosis of subphrenic abscess is given by Doherty and Rowlands. The treatment is discussed and the posterior sub-pleural method of approach is advocated in order to avoid pulmonary complications. Cases are cited illustrating the complications following the transpleural route. Two of the cases show the advantages of the subpleural route.

Seasickness and Labyrinthine Theory—Matland states that his presentation of the subject of seasickness is not intended to be destructive of all existing remedies. It is rather directed against the assumption that any drug or method of treatment is infallible and is incidentally intended to impress on the ship surgeon the need for careful appraisal of type and when prophylaxis fails analysis and evaluation of signs and symptoms. Only after this can he avoid drugs and methods that are definitely contraindicated. Intervention is sometimes unwise and seasickness may occasionally be a blessing, on the other hand relief can be confidently offered to urgent cases from among the many valuable remedies that may be clearly indicated.

Seasickness—In an opportunity recently afforded Flack to investigate certain aspects of seasickness, it was felt that it would be of interest to see how subjects exposed to the prolonged uneven movements of the sea in rough weather reacted in regards maintenance of ocular poise, pulse and blood pressure. In all, 162 cases were examined. Members of the crew who had not been seasick for many years were used as controls. Ability to maintain ocular poise was tested by means of the Bishop Harmon diaphragm, working, for the sake of convenience, with a fixed pupil distance of 65 mm. On the basis of the study the conclusion is drawn that seasickness is predominantly of vestibular origin due to uneven movement. In certain cases in which the labyrinths are unduly sensitive, vomiting may occur early as the result of reflex stimulation of the vagus motor fibers to the stomach. Such cases are of the type that are also liable to seasickness. In cases of seasickness in which the labyrinth cannot be deemed unduly sensitive, its stimulation early induces or aggravates a degree of ocular muscle imbalance which combined with the continued stimulation of the vestibular apparatus, serves to provoke further symptoms. Generally speaking, subjects in whom eye muscle imbalance is not induced or aggravated do not suffer from seasickness, although a slow pulse and a lowered blood pressure may cause a feeling of "limpness."

Ketosis in Seasickness—According to Marrack, ketosis is usual in seasickness after vomiting has begun, and occasionally appears earlier. Ketosis is not the cause of seasickness nor of any of the symptoms of seasickness. It may be regarded as evidence of some metabolic disturbance the nature of which is not known.

Journal of Tropical Medicine and Hygiene, London

34 17 32 (Jan 15) 1931

- Protozoan Bodies in Blood of Two Patients Suffering from an Eruptive
Fever A J Noronha—p 17
- *Does Amount of Malaria Depend on Number of Transmitting Mos-
quitoes? C Manalang—p 19

Does Amount of Malaria Depend on Number of Transmitting Mosquitoes?—Important documents on numerical anopheline prevalence and malaria incidence are quoted and discussed by Manalang. The present discord in the opinions of malarialogists is shown to be due to inadequate collection of data and incoordinated observations. A method of study on anophelism in the premalarial transmission malaria transmission and postmalarial transmission epochs that will give adequate and logical information is given. Data collected from ten places consisting of dissections of about 22,000 *Anopheles funestus*

mosquitoes from September, 1927, to December, 1929, inclusive, show monthly and yearly variations in densities in different localities and in different periods of the same locality as measured by systematic catches by trapping with human bait or by exposure. The infective density or number (sporozoite rate) varied in different places, and in the same place in different periods, because of variations in the ever changing human carrier factor. Much malaria with few transmitters and vice versa exist and can be explained by a knowledge of the density and the infective number of the place at the time. Natural unexplained marked decline in density has been observed in two places and explains the sudden disappearance of transmission in certain uncontrolled localities, often attributed to antimalarial measures in controlled areas. The numerical prevalence of the transmitting species alone means little in the epidemiology of malaria, nor can a known density in one locality be utilized for comparative purposes in another. However, the direct relationship of the vector's density to malaria transmission in a locality at a certain period when the corresponding infective number for that locality and period is known has been shown to operate in nature.

Lancet, London

1 115 170 (Jan 17) 1931

Nephrosis T I Bennett—p 115

Histology of Buccal Carcinoma Prognosis and Radiosensitivity R Phillips—p 118

*Trigeminal Neuralgia Anatomy of Hartel Technic L Morris—p 122

Bismuth Oxichloride Ointment in Treatment of Lupus Erythematosus R M B Mackenna—p 126

Actinomycotic Cerebrospinal Meningitis I W Cann and G J Hollis—p 130

Mucocele of Appendix Early Carcinoma of Cecum J B G Muir—p 131

Histology and Prognosis of Buccal Carcinoma—Phillips has made a study of 319 cases of buccal carcinoma from the points of view of histology and clinical course, and of 71 cases as regards response to irradiation. The accuracy and usefulness of Broders' histologic classification of epitheliomas have been demonstrated. A well marked correlation between the histology and the clinical course of buccal carcinoma has been obtained. This correlation is found especially in the postoperative length of life, the total duration of the disease and the prospects of cure. These are increased the greater the differentiation of the carcinoma and decreased the greater its anaplasia. No direct relationship was found between the histology of buccal carcinoma and its response to irradiation. A hypothesis is suggested to explain this apparent exception to the general correlation between the histogenesis and the biology of buccal carcinoma. The possible use of this hypothesis in the radiotherapy of buccal cancer is suggested as enabling the most suitable method of irradiation to be applied according to the histology of the growth.

Trigeminal Neuralgia Route of "Hartel" Technic

—Morris prefers the Hartel technic because the route taken by the needle is free from danger and the foramen ovale can be located with accuracy and safety if its relations to both the infratemporal surface of the sphenoid bone and the external pterygoid plate are appreciated. A high, horizontal Hartel route is the most accurate, and with its use it is suggested that it is the sensory root and not the ganglionic tissue itself that is affected by the alcohol. If so the results obtained may be expected to be permanent, and so compare with those obtained by major operation.

Bismuth Oxichloride Ointment in Treatment of Lupus Erythematosus—A preliminary report is submitted by Mac Kennan on the treatment of chronic lupus erythematosus with bismuth oxichloride ointment. Of a series of nineteen cases of chronic lupus erythematosus all of which have benefited from the use of the ointment, ten are reported in detail. Of these five have been cured by the use of the ointment in conjunction with injections of bismuth and the clinical reports indicate that in many cases the disease may be cured by the local application of the ointment without injections of bismuth. Cases have been quoted showing that the ointment appears to have a slight antiseptic or bactericidal effect. The ointment has been employed with advantage in two cases of tinea unguium and two cases diagnosed as chancroid. It is shown that while the ointment may be of value as a local application in the treatment of warts and syphilis it is valuable if administered by injection.

Archives des Maladies de l'App Digestif, etc, Paris

20 1017 1144 (Nov) 1930

Influence of Mobilization of Chlorine of Tissues by Mephaphen and Influence of Hypochlorinated Diet on Gastric Secretion A Landau and J Glass—p 1017

Acute and Chronic Typhlitis Relation to Appendicitis R Bernard and S Milone—p 1052

*Dextro e Index as Means of Testing Success of Insulin and Dextrose Treatment in Parenchymatous Disturbances of Liver A B Gornstein and H L Schwarzmann—p 1070

Pathogenic and Clinical Importance of Surface Tension of Urine I Basilewitch—p 1079

Test for Insulin and Dextrose Treatment in Disturbances of Liver—Gornstein and Schwarzmann used Kugelmann's method of determining the dextrose index, that is, they determined the sugar content of the blood immediately before, and again 30, 60, 90 and 150 minutes after an injection of epinephrine given during a period of fasting, and noted the character of the graphic curve as well as the ratio between the highest blood sugar content and the content before the injection. In cases of parenchymatous hepatic disturbances the hyperglycemia usually produced by epinephrine is diminished or entirely lacking; the curve is flattened and the dextrose index is low. The authors used this test in twenty cases of catarrhal jaundice and ten cases of jaundice from arsenamine, in order to measure the success of the insulin and dextrose treatment used. They observed in all cases that the augmentation of the dextrose index was parallel with the amelioration of the general condition of the patient, the disappearance of the jaundice and the appearance of urobilin in the urine. Moreover, the general reaction to the injections of epinephrine became less pronounced as the dextrose index increased.

Importance of Surface Tension of Urine—Basilewitch shows as the result of extensive experimentation that the surface tension of normal urine is slightly lower than that of distilled water and that the surface tension of the urine of an invalid especially in cases of jaundice, is markedly lower than that of water. The author used the capillarmetric method in determining the tension. An analysis of many specimens of urine showed that the pathologic diminution of the surface tension is due in great part to the presence in the urine of biliary acid salts and also at times to the presence of products of decomposition of proteins. It is caused in extremely rare cases by the presence of hemoglobin or of a large quantity of acetone but is never produced by pure colloids. Since the secretion with the urine of large quantities of biliary acid salts and the presence of products of decomposition of proteins is essentially, or even exclusively dependent on the active functioning of the liver, it is clear that the lowering of the surface tension of the urine is a symptom of hepatic disturbances. The author has observed during long clinical experience that diminution of the surface tension appears almost always in cases of jaundice from retention and of parenchymatous jaundice but does not occur in hemolytic jaundice. It is often observed also in diseases of the liver without jaundice, as in atrophic cirrhosis, cancer of the liver and stasis cirrhosis. It appears at times in infectious diseases other than those of the liver (lobar pneumonia, typhoid, scarlatina and measles) in certain intoxications (chloroform, ether, nearsphenamine, lead) in cancerous tumors not of the liver in certain diseases of the blood, for instance, pernicious anemia in severe cases of colitis, and in acute appendicitis. In such cases some more or less important disturbance in the functioning of the liver is evidently involved. The author does not wish to overestimate the semeiologic importance of this symptom but he considers it an important item in the ensemble of clinical and pathogenic information in cases involving hepatic disturbances, with or without jaundice.

Archives des Maladies du Cœur, etc, Paris

23 689 72 (Nov) 1930

Angina Pectoris of Traumatic Extracardiac Origin R Leriche and R Fontaine—p 689

Electrocardiography and Anatomy of Case of Adams Stokes Syndrome E Gerardet—p 704

Angina Pectoris of Traumatic Extracardiac Origin—Leriche and Fontaine report two cases of angina pectoris of extracardiac origin in which the excitation of the sensory cardio

aortic fibers was indirect. In the first case, in which the patient was wounded in the area of the trigonum femorale, the first anginal attack appeared two days after the injury to the limb. In the second case the angina made its appearance ten years after an amputation of the thigh. In the first case a left cervicothoracic sympathectomy was made, i. e., the angina pectoris itself was combated, rather than the original lesion. The results were excellent. In the second case, removal of a painful neuroma at the side of the amputation stump produced a definite amelioration, which, however, lasted only a few weeks. Removal of the left stellate ganglion was equally inefficient. Since the patient refused to undergo another operation the treatment was a failure. The authors believe that in such cases it is advisable to attempt first to suppress the original lesion and if this does not cause permanent relief of the angina, the treatment should then be directed against the anginal syndrome itself.

Bull. et Mem. de la Soc. Med. des Hôpitaux de Paris

(54) 1663-1714 (Dec. 1) 1930

Treatment of Urticaria, Quincke's Edema and Eczema by Concentrated Splenic Extract of Hög. Pasteur Valley Radot and P. Blumontier—p. 1666

Four Cases of Rolandic Area of Different Histologic Nature. Late Results of Their Surgical Removal. T. Mouroumou, D. Petit, Dutailly, I. Bertrand and P. Schmitz—p. 1672

*Azotemia from Acriflavine Hydrochloride. Two Cases. C. Richet and R. Couder—p. 1690

Case of Fatal Insulin Coma in Nondiabetic Person. F. Rathery and Sigwald—p. 1702

Treatment of Streptococcal Septicemia with Vincent's Serum. I. Laederich and Odru—p. 1706

Azotemia from Acriflavine Hydrochloride. Two Cases.—Richet and Couder report two cases in which injections of acriflavine hydrochloride were followed by marked azotemia. From observation of these two cases and from experiments on animals they feel justified in concluding that certain preparations of acriflavine hydrochloride in the ordinary therapeutic doses produce severe and even fatal azotemic reactions. For this reason one should not exceed a dose of 20 cc. of a 1 per cent solution under ordinary circumstances. If renal disturbances are already present, particular caution should be exercised. If possible every injection should be controlled by a determination of the urea content of the blood about forty-eight hours after the injection, especially if another injection is to follow. Persistent vomiting or nausea is a dangerous symptom. The reason for the hypertoxicity of certain preparations of acriflavine hydrochloride has not been determined.

Journal de Chirurgie, Paris

36 697-856 (Nov.) 1930

Experimental Arterial Thrombosis and Gangrene. Comparative Value of Arterial Ligatures and Arterectomy. P. Stricker and F. Orban—p. 697

*Forty-Two Cases of Perforated Gastric and Duodenal Ulcers. P. Wilmoth—p. 712

Arthrodesis of Spinal Column in Scoliosis. M. Fevre and R. Bureau—p. 721

Forty-Two Cases of Perforated Gastric and Duodenal Ulcers.—Wilmoth reports his results in forty-two cases of perforated ulcers of the stomach and duodenum. Of the forty-two patients twenty-one were between 20 and 40 years of age, nineteen were between 40 and 63, and the age of two patients was not recorded. There were thirty-nine men and three women. There were twenty-eight ulcers of the stomach, and eleven of the duodenum. In three cases the localization was not definite. All the ulcers observed were on the anterior wall of the stomach or duodenum. Among the twenty-eight gastric ulcers twenty-one were of the indolent type; there were eight indolent ulcers of the duodenum. It is sometimes difficult, if not impossible, to detect the development of an ulcer before the perforation takes place, and the absence of preliminary symptoms of pain and digestive disturbances makes a correct diagnosis difficult in the face of a violent onset of pain similar to that observed in appendicitis. The author believes, however, that errors in diagnosis may be avoided by taking account of the following three symptoms: (1) the absence of fever above 38°C (100.4°F); (2) a slight acceleration of the pulse which during the first twelve hours rarely exceeds 90; (3) muscular

contraction, always more pronounced in the supramesocolic region. Moreover, prehepatic tympanism usually present in acute appendicitis, was absent in all of the forty-two cases of perforated ulcer observed by the author. Absence of vomiting is also a significant symptom. The importance of an early diagnosis, in order that an operation may be performed within the first ten or twelve hours, is generally recognized. Among the forty-two cases reported eleven operations before the sixth hour gave eleven cures, seventeen operations between the sixth and twelfth hours gave nine cures and eight deaths, and eight operations between the twelfth and twenty-fourth hours gave five cures and three deaths. In six cases the exact time of the operation was not recorded. In thirteen cases the operation used was merely burial of the perforation by means of one or two purse-string sutures. In twenty-four cases burial completed by a posterior gastroenterostomy was used, when the suture caused stricture of the pylorus or duodenum. There were two deaths among the patients treated by simple suture of the perforation and five among those in whom the burial was complemented by a gastroenterostomy. The author regards burial as the operation of choice, a gastroenterostomy being added when it seems advisable in order to favor cicatrization of the perforation.

Archivio Italiano di Chirurgia, Bologna

26 237-424 (June) 1930

Cholecystitis Without Calculus. Icteric Strawberry Gallbladder and Lithiasis of Gallbladder. G. Fichera—p. 237

Functional Exploration of Liver and Reticulo-Endothelial System. M. Ronzini—p. 333

Experimental Renal Mycosis Due to *Cryptococcus Interdigitalis*. P. Barco—p. 401

Functional Exploration of Liver and Reticulo-Endothelial System.—Ronzini, on the basis of experimental and chemical researches in which he used bengal rose as a dye, the mechanism of the disappearance of which from the circulation is associated with the chromopexic power of the reticulo-endothelial system and with which he combined the test of the plasmatic biliary index, concludes: 1. Of the anesthetics, chloroform modifies intensely the behavior of cholemia and of bengal rose during the first five to seven days. The influence exerted by ether is uncertain and inconstant. Local and segmental anesthetics produce no modification. 2. Of the surgical traumas, only those affecting the liver and the biliary tracts cause functional defects in the hepatic cells while the influence of operative traumas usually remains negative. 3. The subjects showing previously modified results with the bengal rose test and the test of the plasmatic biliary index become more easily a prey to postoperative complications and the cases with a complicated postoperative course are always early associated with an increase of the percentage of bengal rose and of bilirubin retained in the blood.

Experimental Renal Mycosis Due to *Cryptococcus Interdigitalis*.—Barco injected directly into the renal parenchyma of experimental animals (dogs) a culture of *Cryptococcus interdigitalis* diluted with Ringer's solution. From histologic observations made after various periods of time (15, 45, 90, 120 and 150 days) after the inoculation, he concluded that *Cryptococcus interdigitalis* in an attenuated culture and with suitable technique develops in the renal parenchyma giving rise to the formation of a so-called mycotic granuloma, which assumes the characteristics of a hyperplastic process of a chronic type and with the tendency at first to extend further, followed, in turn by a progressive involution brought about by the connective tissue of the elements that surround the mycoma itself.

Archivio Italiano di Urologia, Bologna

7 1134 (Nov.) 1930

*Some Rare Forms of Renal Tuberculosis. G. Tarozzi—p. 3
Mixed Hypernephroid Tumors of Kidney. C. Tedeschi—p. 100

Rare Forms of Renal Tuberculosis.—Tarozzi brings out that renal tuberculosis, in all the forms in which it is manifested must be regarded, almost without exception as of hematogenic origin, and in the beginning at least as bilateral and in renal tuberculosis apparently unilateral, isolated miliar

tubercles are usually found in the other kidney, often in the course of evolution, or there may be only cicatricial remnants of milinary tubercles. The localization of the initial hematogenic tubercle in the vicinity of a papilla, and its extension over the papillary surface is the condition that most facilitates the later evolution and diffusion of a tuberculous process in the kidney while the primary hematogenic milinary foci distributed throughout the mass of the kidney usually tend after a varying period of slow evolution, toward spontaneous retrogression and also cicatrization.

Clinica Chirurgica, Milan

33 1207 1374 (Nov.) 1930

Anatomopathologic Clinical and Therapeutic Considerations on Malignant Tumors of Stomach Submitted to Radical Operation F. Rossi —p 1207

Sarcomatous Epulis Due to Irritation of Foreign Body Embedded in Tooth Socket A. Citterini —p 1292

Postoperative Bronchopneumonia G. Oselladore and A. Luisada —p 1307

Consideration of Malignant Tumors of Stomach Radically Operated On—Rossi reports that from 1919 to 1927 the neoplasms of the stomach diagnosed in the Clinica chirurgica di Milano amounted to 228. Of the patients 28 or 12 per cent were not operated on. 50 or 13 per cent were subjected to a simple exploratory laparotomy. 87 or 38 per cent to a gastro-enterostomy. 83 or 45 per cent of those operated on, were subjected to resection of the stomach. The author discusses these in detail. Three were sarcomas the others, carcinomas. The average postoperative mortality was 33 per cent. Of those who were cured surgically twelve had left the neighborhood. Of the others, two were still living after nine years, two after seven years, two after six years, and two after five years. Important anatomopathologic, clinical and therapeutic considerations are given.

Clinica Pediatrica, Modena

12 923 1018 (Nov.) 1930 Partial Index

*Maternal Factors in Development of Rickets G. Macciotta —p 923

Maternal Factors in Development of Rickets—Macciotta discusses the intra uterine origin of rickets. He believes that several toxic or infectious factors such as syphilis, malaria, tuberculosis or auto-intoxication or conditions of either alimentary or endocrine insufficiency act on the fetus through the organism of the mother. In 40 per cent of 735 rachitic children aged from 2 months to 2 years, observed by the author, such maternal factors appeared as the etiologic factors of the disease. The author made an experimental study on animals either pregnant or recently after delivery in connection with his clinical observations. He found that when pregnant animals are deprived of phosphorus, the offspring show precise histologic, roentgen and morphologic manifestations of experimental rickets which manifestations are not so marked when they are deprived of calcium only, the quantity of phosphorus being normal. This fact, the author believes, proves the role that hypophosphatemia rather than hypocalcemia plays in the development of rickets. The offspring of animals which during pregnancy have been kept in dark places receiving normal diets but no light show manifestations of rickets probably caused by the condition of hypophosphatemia, which is observed in animals kept in dark places. The offspring of animals treated during the entire period of pregnancy with thymic, suprarenal or hypophyseal extracts as well as those of animals subjected to total thyroidectomy during pregnancy, were normal. Litters of animals that received extract of total thyroid during the entire period of pregnancy develop grave forms of rickets associated with nutritional disturbances usually incompatible with the life of the animals. The deprivation of antirachitic factors in the alimentation of mothers either during pregnancy or during nursing causes the development of rickets in the offspring. The author discusses the mechanisms involved in the development of rickets in which cellular metabolic and constitutional disturbances cause certain conditions in the fetus through the maternal organism which later during the extra-uterine life prevent the normal development of the processes of ossification. By applying the observations of his experiments to human beings the author concludes

that prophylaxis of rickets in infants should start during the fetal period and be continued during the nursing period in both instances through the organism of the mother.

Pediatria, Naples

38 1145 1200 (Nov.) 1930

*Spasmophilic Forms of Enuresis in Children G. Macciotta —p 1145
Changes of Potassium and Calcium Metabolism in Peptone Shock with Circulatory Insufficiency E. Schiff, H. Eliasberg and A. Mazzco —p 1118

*Behavior of Blood Fibrin in Several Types of Anemia E. M. Mondini —p 1162

Spasmophilic Forms of Enuresis in Children—Macciotta considers two forms of nocturnal enuresis in children: essential and secondary nocturnal enuresis. The first mentioned form is only a symptom of certain pathologic conditions of the child. The author reviews the several theories on the pathogenesis of essential nocturnal enuresis. He believes that there is a relation between the disease and an increased excitability of the nervous system. He reports the results of his observations in twenty-four enuretic children aged from 2 to 6 years. Cases of secondary enuresis or conditions of a pseudo enuretic type such as the habit of children to urinate in bed because of poor bringing up or psychic inferiority as well as those forms of enuresis in which the disease could be caused by influence of pathologic conditions of the lumbar portion of the vertebral column of the spinal cord or of the genitalia or of the urinary tract were excluded from this group. Most of the children observed had some familial nervous taint especially alcoholism, and less frequently hysteria or epilepsy. In seventeen of his cases the author found a more or less marked increase of the galvanic excitability, hypocalcemia and slight diminution of the ionic concentration associated in some of the cases with manifestations of mechanical hyperexcitability. He considers these cases of essential nocturnal enuresis to be manifestations of spasmophilia in which the individual local nervous constitution causes the nervous stimulus which the detrusor urinae receives to be physiologically sufficient (especially while sleeping). The author obtained rapid and almost constant cure of essential nocturnal enuresis in his group of children with treatment by ultraviolet rays. His results were still better when the ultraviolet irradiations were given in association with the administration of vitamin B, the treatment having been complemented in some cases with the administration of parathyroid hormone.

Behavior of Blood Fibrin in Several Types of Anemia—In order to determine the behavior of blood plasma fibrin in anemia of different causes and different types Mondini made estimations of the fibrin content of the blood plasma first in ten normal children aged from 1 to 8 years on which to base his studies and then in twenty-five children aged from 1 to 12 years with primary or secondary anemia of a regenerative or nonregenerative type. In both groups of children the fibrin content of the blood plasma was about the same as that in older children. In normal children the fibrin content of the blood plasma gave an average of 3.68 Gm. per thousand cubic centimeters. In the group of anemic children the variations of the fibrin content of the blood depend more on the etiology of the anemia than on the type of the disease. The forms of pseudo-leukemic and hypoplastic anemia and kala-azar are associated with hypofibrinemia. The intensity of hypofibrinemia is in relation with the maximum degree of anemia. The types of anemia secondary to metapneumonic emphysema and anemia of the second period of tuberculosis are associated with hyperfibrinemia. The content of fibrin in the blood plasma of patients with anemia caused by purpura hemorrhagica or any other type of post-hemorrhagic anemia is normal. The changes that the fibrin of the blood plasma undergoes in several types of anemia make the author suspect a probable relationship between the bone marrow and the formation of fibrinogen.

Polichinico, Rome

77 1701 1736 (Nov. 24) 1930 Practical Section

Etiology of Lipoid Nephrosis R. Rinaldi —p 1701
*Treatment of Perforated Duodenal Ulcers S. Jugh, A. Allegra —p 1707
Case of Kala-azar. Cure Effected by Splenectomy J. Turiano —p 1710

Treatment of Perforated Duodenal Ulcers—Puglisi Allegra recites the results secured in the treatment of perforated duodenal and juxta-pyloric ulcers by a surgical procedure based

on a constant anatomicopathologic observation, namely, the restriction of the peritoneic process, for a considerable period, to the right hypochondrium and the diffusion of the exudate toward the right renal pocket. He performed a posterior transmesocolic gastrotomy, watching carefully with every maneuver for the perforation in order not to spread the infective process. By means of a wide curvilinear midaxillary incision under the costal arch an opening was obtained that permitted, with great facility, the treatment of the ulcer (cauterization and suture) and suitable drainage.

Rivista di Clinica Medica, Florence

71 937 980 (Sept 15) 1930

Autohemolytic Power of Various Organic Fluids in Man A Montanari —p 937

India Ink Test as Applied to Cerebrospinal Fluid A Greco —p 963

Autohemolytic Power of Various Organic Fluids in Man—Montanari tested the autohemolytic power of 139 human organic fluids (97 blood serums, 27 cerebrospinal fluids and 15 exudates and transudates) and studied the special nature and the diagnostic value of such power. He found in two blood serums a small amount of a true, nonspecific autohemolysis, associated in each case with icterus. In five other cases there was a weak chemicophysical hemolytic power that had no particular relations with the age of the subject, the disease or a positive Wassermann reaction. In the spinal fluid of a syphilitic person he found a true autohemolysis and in twenty-four other cases a weak chemicophysical hemolytic power that must be regarded as physiologic and persistent in pathologic conditions. As to transudates and exudates he found an absence of hemolytic power in the former and presence of hemolytic power of a weak chemicophysical type in about one third of the latter and proportional to the albumin index.

India Ink Test as Applied to Cerebrospinal Fluid—Greco has found the india ink test as applied to the cerebrospinal fluid by Benedek and Thurzo of value in the examination of the cerebrospinal fluid. He confirms that a negative reaction of the cerebrospinal fluid excludes with certainty pathologic changes as well as the ordinary means of research. As regards the positive reaction, however, the characteristic value of the colloiddoprotective index assigned by Benedek and Thurzo to the various diseases of the nervous system must be accepted with reservations in view of the difference in the observations in a given disease and the similarity of the observations in different diseases. In the mechanism of the reaction the globulins present in the cerebrospinal fluid are very important and the value of the colloiddoprotective index in pathologic fluids is apparently in relation to the quantity of globulins. The test gives therefore a useful indication in regard to the amount of globulins in the cerebrospinal fluid.

Rivista di Patologia e Clin della Tuberculosis, Bologna

4 921 1004 (Nov 30) 1930

Mechanism of Action in Surgical Treatment of Pulmonary Tuberculosis M Redaelli —p 921

Tuberculous Infection and Endothoracic Tuberculosis in Childhood G Luzzatto-Fegiz —p 939

*Disinfection of Wools Infected with Tuberculous Products A Giovanardi —p 966

Pleural Tuberculosis with Large Caseous Nodules Gwerder Pedoja and L Kalmar —p 973

*Value of Arneth's Formula and Erythrocyte Sedimentation Test in Prognosis of Pulmonary Tuberculosis A Curti and J Stephani —p 977

*Phrenic Avulsion in Pulmonary Tuberculosis G Forni —p 985

Disinfection of Wools Infected with Tuberculous Products—Giovanardi states that chloramine is a good disinfectant of contaminated wools also efficacious when tuberculous products such as dried sputum are involved. For the ordinary disinfection of woolen garments at least a 3 per cent solution is required the garments being left four hours or more in the solution. If an especially effective concentration is desired a 5 per cent solution applied for from two to four hours is recommended.

Arneth's Formula and Sedimentation Test in Prognosis of Tuberculosis—Curti and Stephani describe the technique of the erythrocyte sedimentation test and the technique of the Arneth research on neutrophils and point out the causes that may produce variations in the results of the sedimentation test. From

the results of the two tests carried out systematically on seventy patients, they assign a greater value to the Arneth formula, which appears to be more reliable than the sedimentation test, not only as to the various phases of the disease but also as to the remote outcome.

Phrenic Avulsion in Pulmonary Tuberculosis—Forni reports the results of phrenic avulsion performed on twelve women ranging between 19 and 35 years of age and on eight men between 20 and 30 years of age. After an interval of two years in some cases and of at least eight months in other cases, the results as deduced from the manifestations of the general condition and from objective roentgen and laboratory data can be summarized as follows. Rapid and enduring improvement was shown in four of the six patients affected with sclerotic infiltrative processes. In the other fourteen patients there was a good result in three cases, perceptible improvement in three others and slight if any improvement in five cases. Three patients died, one from hemoptysis and two from cachexia. A clinical recovery in the sense of an incomplete but economic recovery was effected in seven patients, in three there was a perceptible improvement although the tuberculous process remained in an evolutionary stage in the remaining seven the improvement was slight and perhaps will be nil if the process should progress and spread. It is certain that phrenic avulsion constitutes, under some conditions one of the best means of facilitating, with fibrous neoformation, cicatrization of the lesions.

Prensa Medica Argentina, Buenos Aires

17 805 848 (Nov 10) 1930

*Influence of Pregnancy on Pulmonary Tuberculosis A. A. Ramondt —p 805

Technic and Results of Intravenous Urography by Means of Ioxal A J Bengolea and J A Saralegui —p 810

Bennett's Fracture Case R Finocchietto and A A Covaro —p 870

*Globular Resistance and Cholesteremia in Icterus C Velasco Suarez and M Etcheverry —p 823

Unusual Results of Therapeutic Pneumothorax in Pulmonary Tuberculosis J Dutrey —p 826

Influence of Pregnancy on Pulmonary Tuberculosis—Ramondt made a comparative study of 446 nonpregnant tuberculous women and the same number of pregnant tuberculous women. The two groups had similar forms of tuberculosis in its different stages (first, second or third stages). From his observations the author concludes that the evolution of tuberculosis in pregnant women depends more on the clinical form of the tuberculous lesion in the lung than on a direct injurious influence of pregnancy on tuberculosis. Tuberculous women should not become pregnant but, once the patient is pregnant, the proper conservative treatment should be given and the interruption of pregnancy as a systematic method should be avoided. In pregnant tuberculous women with progressive unilateral tuberculosis, the induction of therapeutic pneumothorax is advisable. Tuberculous patients who at the beginning of pregnancy present grave disturbances of digestion which are not improved by treatment with absolute rest probably cannot bear well the pregnancy. In these patients the interruption of pregnancy is advisable. Tuberculous patients who after a stationary period of tuberculosis show a reactivation of the disease during the first months of pregnancy may benefit from the interruption of pregnancy. In some patients the disease stops during pregnancy and the lesion enters a stationary period. This improvement in the patient's condition is caused by the elevation of the diaphragm which gives the pathologic lung relative rest. In these patients the thoracic compression should be performed immediately after delivery to avoid a possible aggravation of tuberculosis caused by the sudden decompression due to the dropping of the diaphragm to its normal position.

Globular Resistance and Cholesteremia in Icterus—Velasco Suarez and Etcheverry made determinations of the cholesterol content in the blood of patients with several types of icteric syndromes in relation with the globular resistance and the hematologic formula of the patients. They reach the following conclusions. There seems to exist a relationship between the cholesterol content of the blood and the resistance of erythrocytes to hemolysis. The larger the cholesterol content of the blood the greater the increase of the globular resistance. On the contrary, a normal or diminished cholesterol content of the

blood is associated with either normal or diminished globular resistance. In the majority of cases of icteric syndromes both the number of erythrocytes and the amount of hemoglobin are diminished, regardless of whether the globular resistance is increased or diminished. In forms of obstructive jaundice the anemia is of the secondary form and is of slight intensity. In splenomegalic hemolytic jaundice, on the contrary, the anemia is of a grave nature. The authors state that the physiopathogenesis of icteric syndromes is not sharply defined. In the etiology of obstructive jaundice syndromes, besides the mechanical factor which is the direct cause of jaundice, hyperhemolysis has an important role as the determining factor of hyperbilirubinemia.

Siglo Medico, Madrid

56 569 596 (Nov. 29) 1930

- *Serous Meningitis from Cranial Fractures. M. Gomez Duran—p. 569.
Gout Pathogenesis. Hydrotherapy. C. Garcia de Cosa—p. 574.

Serous Meningitis from Cranial Fractures.—Gomez Duran reviews the symptoms that lead to an early diagnosis of serous meningitis when a trauma with possible cranial fractures has been received. As treatment the author advises intravenous injections of a 50 per cent solution of dextrose in doses of 200 or 300 cc a day. The mechanism of action of the dextrose solution, as well as of hypertonic solutions of sodium chloride or Ringer's solution, is that it causes modifications of the osmotic pressure. Hypertonic solutions when administered early give gratifying results by reducing the increased intracranial pressure. The author reports the case of a syphilitic patient, aged 20 who after a trauma of the head developed serous meningitis. He believes that in this case syphilis caused a special condition of the cerebral meninges which condition favored the development of serous meningitis when the trauma was received.

Deutsche medizinische Wochenschrift, Berlin

56 2075 2118 (Dec. 5) 1930. Partial Index

- *Charcoal Therapy in Febrile Abortion. Benthin—p. 2075.
Localized Osteitis Fibrosa Disease Entity Differing from Other Forms of Osteitis. E. Gold and H. Schlesinger—p. 2076.
Clinical Aspects and Diagnosis of Tuberculous Nephritis. S. Simon, S. Werhoff and W. Grossfeld—p. 2079.
*Clinical Aspects of Paradoxical Embolism Especially After Confinement. W. Kressin—p. 2081.
*Spleen Extract in Treatment of Pulmonary Tuberculosis. J. Leitner—p. 2082.
Mode of Action of Paraffin Treatment. H. Lampert—p. 2084.

Charcoal Therapy in Febrile Abortion.—Benthin reports his experiences with charcoal therapy in febrile abortion. He was induced to employ charcoal in such cases by the favorable results that had been obtained with it in veterinary medicine. What makes charcoal especially suited for the treatment of febrile abortion is its great adsorptiveness, the capacity for fixation of the microorganisms, the power to detoxicate to check the resorption of toxins and to hasten the discharge of the pathogenic organisms. In regard to the technique of charcoal therapy the author states that he introduces sterile charcoal pencils into the uterus where they dissolve. Occasionally undissolved pieces are later found in the cervix or in the vagina. However, in the uterus they become completely dissolved. The author employed this method during the last four years in 300 cases. Only one of the patients died. In 10 per cent of the cases minor complications developed. Serious complications developed in five cases. The method has been investigated in several clinics and objections have not been made. It was also found helpful in cases of puerperal endometritis. In summing up the advantages of charcoal therapy the author stresses the simple technique, which permits its application in general practice. The duration of the disease is considerably reduced and the dangers of active intervention are lessened by preliminary introduction of carbon pencils. Other advantages are the deodorizing effect of charcoal and the furthering of the discharge.

Paradoxical Embolism Especially After Confinement

—Kressin reports the case of a primipara aged 30. On the eleventh day after confinement severe pains were felt in the calf of the right leg and several hours later the patient complained of pains in the right side of the chest. A pulmonary infarct was demonstrated. On the following day the patient got up against the physician's orders. She collapsed and soon

afterward felt severe pains in the left leg. On the following day the case was diagnosed as arterial embolism in the region of the left leg. About sixty hours after the development of the embolism the patient was brought to the hospital. Here the case was diagnosed as paradoxical embolism with obstruction of the left femoral artery. An operation was performed, but the woman died seven hours later. The results of the necropsy are reported and it is assumed that the embolus developed from a puerperal thrombosis of the right femoral vein and that through a persistent foramen ovale it reached the artery. The author emphasizes the significance of an early diagnosis and immediate surgical treatment. If the operation is performed during the first five hours 70 per cent of the patients recover; if ten hours has elapsed only 50 per cent recover and the literature contains a report of only one case in which the operation was successful forty-eight hours after the development of the embolism.

Spleen Extract in Treatment of Pulmonary Tuberculosis.—Because other authors had obtained favorable results with spleen diet in severe febrile tuberculosis Leitner employed spleen extract in the treatment of forty-one patients with pulmonary tuberculosis. Thirty-five of these patients were in the third stage of the disease and six were in the second stage. In all cases bacilli could be detected, and thirty-six had caverns. In fifteen patients the larynx was involved. The patients were given daily an amount of spleen extract equivalent to 120 Gm of fresh spleen. The treatment was continued for from six weeks to five months. Of the forty-one patients, twenty-four were not influenced by the spleen therapy. Of the other seventeen patients, one with exudative tuberculosis showed a marked improvement. The patient's weight increased, the temperature decreased and the pulmonary process became latent. The other sixteen patients showed improvement particularly in the general condition, such as increase in weight, decrease in the temperature and in some cases also a decrease in coughing and in the quantity of sputum. However the pulmonary process only became temporarily stationary but did not show improvement. The laryngeal processes were not influenced. The author did not obtain such favorable results with spleen therapy as did some other investigators. But because the treatment never has harmful effects, and in some cases gives favorable results a trial is justified especially in cases in which other therapeutic methods cannot be used.

Klinische Wochenschrift, Berlin

9 2233 2280 (Nov. 29) 1930

- Röntgen Mutations and Late Injuries After Röntgen Irradiation. L. Nurnberger—p. 2233.
Influence of Ovarian Tumors on Sexuality. R. Meyer—p. 2257.
*Significance and Function of Interstitial Cells of Testis Studied on Guinea Pigs with Experimental Tuberculosis. K. Ziegler—p. 2210.
*Pathogene is of Frithemia and of Leukemia. I. P. Weber and O. B. Bode—p. 2244.
Clinical Aspects and Hematology of Metastatic Tumors of Bones. I. Zadek and A. Sonnenfeld—p. 2245.
Alcohol Complement Fixation Reaction According to Scarra and Its Relation to Wassermann's Reaction. A. Joseph and M. Crumwald—p. 2248.
Bacteriologic Diagnosis of Tuberculosis. J. Mouriz—p. 2249.
*Development of Uremia in Scarlet Fever Nephritis. A. Altmann—p. 2252.
Influence of Intracutaneous Injection on Basal Metabolism. W. Lowenstein—p. 2255.

Function of Interstitial Cells of Testis Studied on Guinea-Pigs with Experimental Tuberculosis.—Ziegler points out that of the cellular elements of the testis Sertoli cells in the tubules and Leydig cells of the interstitial tissues deserve especial attention because their functional significance and their relation to the semimurous tubules is still not entirely understood and some of the explanations are contradictory. He studied these problems by carefully observing the changes in the testes of tuberculous guinea pigs. On the basis of his observations he comes to the conclusion that the Sertoli cells of the tubule and Leydig cells of the interstitial tissues are cell forms which genetically and functionally are of equal value and which are the parent cell of spermatogenesis. A specific system of interstitial cells which genetically and functionally differs from the semimurous system does not exist. The interstitial cell formations in the course of atrophic processes

or during reparatory growth processes are fluctuating manifestations. They are either tubules in the process of reduction or newly forming seminiferous tissues. The author is in agreement with those investigators who consider tubules and interstitial cells as one tissue system that has the hormonal secretion in common. This theory would also explain the fluctuations in the extension of the interstitial cell system in the various pathologic conditions, in cryptorchidism, in eunuchoidism, in inanition and in phthisis. The cells adapt themselves to the unfavorable nutritional conditions by changing into that form which is best suited to the reduced metabolism. They have a greater resistance against injurious influences and retain their potential energy.

Pathogenesis of Erythremia and of Leukemia—According to Weber and Bode, the main argument for the theory that erythremia is due to an excessive formation of erythroblasts by the bone marrow is the occurrence of cases in which erythremia and leukemia are combined, that is in the blood picture both the white and the red corpuscles show an abnormal increase. Such cases, which are designated as erythroleukemia, may differ widely from one another; however, they all represent links of a chain, on the one end of which stands erythremia and on the other end leukemia as proof of an excessive hematopoietic activity. Many investigators oppose a comparison between erythremia and myeloid leukemia on the ground that in erythremia there exists an excessive number of mature blood cells, whereas in myeloid leukemia there appears in the blood stream a large number of immature forms. Against this argument it can be said that there are rare forms of leukemia in which the increased number of leukocytes consists largely of mature cells. The authors consider the neoplastic theory as the most reasonable explanation for myeloid leukemia, for erythremia and for the entire erythroleukemic group. This neoplastic process becomes manifest (1) as erythremia in an exclusive erythroblastic hyperfunction, (2) as erythroleukemia when the erythroblastic and myeloblastic functions are both affected, (3) as erythremia followed by myeloid leukemia when first the erythroblastic and then the myeloblastic actions are involved, (4) as myeloid leukemia followed by erythremia when the reverse is the case, and (5) as myeloid leukemia when only a myeloblastic hyperactivity exists.

Uremia in Scarlet Fever Nephritis—Altmann observed that scarlet fever develops at present mostly in the less severe forms and the complications are likewise slight. Only nephritis has become more frequent and also more severe. In spite of the fact that a strict diet was instituted immediately after nephritis had become manifest, uremia developed in one out of five patients and some of these cases had a fatal outcome. In order to determine in what cases of scarlet fever nephritis the development of uremia may be expected, the author determined the rest nitrogen and carefully observed diuresis, hematuria and albuminuria. However, it was found that uremia develops independently of the renal function and that there are no sure signs of a threatening uremia. It is not possible to differentiate between various forms of uremia on the basis of an increase in the rest nitrogen during acute nephritis. Whether spasmic uremia of acute nephritis and silent uremia during chronic nephritis are two different diseases could not be determined.

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- Immunity and Vaccination in Tuberculosis K. Lydin—p 2281
- Hormonal Pregnancy Reaction of Urine in Man and Animals B. Zondek—p 2285
- Psychotherapy in Medical Polyclinic J. Bauer—p 2289
- Results of Psychotherapy in Polyclinic for Patients with Internal Diseases P. Wenger—p 2290
- Behavior of Oxidation Ferments of Foods in Human Digestive Apparatus I. Boas—p 2295
- Chemical Composition of Iopax A. Binz and C. Rith—p 2297
- Determination of Adsorption Capacity of Medicinal Charcoal H. Langecker—p 2298
- *Treatment and Prophylaxis of Rickets by Means of Small Doses of Quartz Lamp Radiation H. Vollmer—p 2300
- Significance of Medication with Ammonium Chloride for Diuresis P. Saxl and O. Erlsbacher—p 2302
- *Distribution of Blood Groups Among Population of Spain J. Andreu Urra—p 2303
- Criticism of Methods of Passive Transmission of Hypersusceptibility E. Urbach—p 2304

Treatment of Rickets by Small Doses of Quartz Lamp Radiation.—Vollmer points out that whether large or small doses of ultraviolet rays are applied, the results are about the

same. This indicates that in many cases too large quantities are applied, which not only overburden the child but also are a waste of time and of electric power. Forty-three nursing children, whose care was supervised in a health center, were given a quartz lamp treatment once a week. The rays were applied for from four to five minutes each on the chest and back. The distance was 80 cm. In infants in whom the rickets was especially severe, the irradiation was at first given twice weekly. With this method most cases of rickets were cured after 100 minutes of treatment with the quartz lamp, and, once cured, the children had no relapse during the winter. The author thinks that a weekly irradiation of from four to five minutes on the chest and back is the minimal effective dose. Between the minimal dose for prophylaxis and for treatment there is no great difference. The results obtained with minimal doses are more favorable than those obtained with other treatments of rickets.

Distribution of Blood Groups in Spain—Andreu Urra determined the blood groups of 904 persons. Among this number were persons from all parts of Spain, but those from the central provinces predominated. The author puts especial emphasis on this fact because in the central parts of the country all race elements, Romanic, Gothic and Arabic, are mixed, whereas in the northern parts the mixture is not so complete. The invading peoples did not remain long in the northern provinces but migrated to the central and southern parts of the country. Of the 904 persons examined, 20.3 per cent showed group I (O), 50 per cent belonged to group II (A), 15.7 per cent to group III (B) and 13.9 per cent to group IV (AB). The race biologic index of the Spanish population, according to Hirschfeld's formula, is 22. In comparing the percental distribution of the blood groups among the Spanish population with those among other Latin peoples, the author found that the distribution of groups II and III is much like those in other Latin countries. However, the percental distribution of groups I and IV is much different in Spain than in other Latin countries. Whereas in other countries only from 3 to 7 per cent belong to group IV, in Spain 13.9 per cent belong to this group and whereas in other Latin races from 36 to 50 per cent of the people belong to group I, in Spain only 20.3 per cent have this type of blood.

Medizinische Klinik, Berlin

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- Active Immunization Against Diphtheria: Testing and Evaluation of Vaccines W. Kollé—p 1809
- *Cancers in Region of Lower Liver J. Pelnar—p 1813
- *Regeneration of Bones Destroyed by Tuberculous Processes M. Jerusalem—p 1816
- *Hematuria in Cholecystopathy H. Edelmann—p 1817
- *Extramammary Perineal Method of Prostatectomy E. Haam—p 1818
- *Primary Sarcoma of Heart and Its Clinical Manifestations K. Dencke—p 1820
- Spontaneous Healing of Early Tuberculous Cavern of Lung W. Heilmann-Hatry—p 1821
- Autoserotherapy Schottky—p 1823
- Experiences with Turpentine Turbidity Reaction M. Zuhdi—p 1824
- Behavior of Leukocytes in Aplastic Anemia H. Simchowitz—p 1824

Cancers in Region of Lower Liver—The cancers in the region of the lower portion of the liver represent a special clinical group, and for this reason Pelnar discusses them together. To this group belong cancers of the gallbladder, of the biliary tract, of the duodenal papilla and of the pancreas. Each of these cancers has typical symptoms, but all of them have certain manifestations in common. After discussing the frequency of these cancers, the author describes the symptomatology of each of them. A comparison of the clinical pictures shows that the cancers of the region of the lower liver become manifest as lingering, cachectic diseases without fever and without chemical or roentgen signs of cancer of the stomach and without marked anemia. The liver becomes enlarged without perceptible nodules and frequently the gallbladder is palpable. In the beginning of the disease or during its course mechanical icterus or atypical pains in the epigastrium develop. Sometimes these two symptoms concur. As a rule the patients do not appear very pale, generally they have a neutrophilic leukocytosis. Only in rare cases is resistance noted over other organs besides the gallbladder. Of the special diagnostic methods, roentgenoscopy will reveal that a progressive disease process exists in the region between the pre-

pylorus and the duodenum but that cancer of the stomach is absent. Examination of the duodenal contents gives indications that the flow of bile and of the pancreatic secretions has stopped or of hemorrhages from the duodenal mucous membrane. The determination of the glycemic curve indicates disturbances in the internal secretion of the pancreas. These may be caused either directly by a tumor or indirectly by cachexia. Benign processes which are of significance in the differential diagnosis are cholelithiasis and cholecystitis. In cholelithiasis cachexia is almost never present, and cholecystitis usually has an acute initial stage. Most significant for an early recognition is that cancer is thought of. The exact localization of the tumor is not so essential. The internist and the surgeon should cooperate. An early exploratory laparotomy is advisable. Only if the cancer is removed in the beginning stage can good results be obtained.

Regeneration of Bones Destroyed by Tuberculous Processes.—Jerusalem reports the clinical history of a patient with severe exudative posttraumatic tuberculosis of the wrist joint as well as of the proximal terminations of the metacarpal bones. For ten months the process was destructive and after that for about a year regeneration could be observed. Several roentgenograms show the process during the successive stages of destruction and regeneration. The process was treated by repeated punctures and irrigations. For three months the patient was placed on a spleen diet and in the course of one year several series of roentgen treatments were given. The rays were applied through a filter of 0.3 mm of brass and 1 mm of aluminum. One fifth of a unit skin dose was applied during each session. To what extent the regeneration was induced by the treatment cannot be definitely ascertained but it is probable that the immobilization of the joint by a fixation bandage was helpful. The repeated punctures and irrigations may likewise have been a therapeutic aid and since roentgen therapy has proved helpful in many forms of surgical tuberculosis, it cannot be doubted that the regeneration was largely due to the roentgen treatments. As an essential factor the author considers the strict aseptic treatment of the fistulas. The asepsis prevented a secondary infection with cocci and thus one of the most serious complications of tuberculosis of bones and joints, namely, a mixed infection was avoided.

Hematuria in Cholecystopathy.—Edelmann asserts that while formerly a relation between disturbances in the biliary tract and renal disorders was not thought of, in recent years the literature has contained several reports of such relations. In cases that show all the symptoms of nephritis the diagnosis is usually not difficult. However in cholecystopathy in which microscopic hematuria is the only sign of renal disorder the diagnosis is more difficult. The author made observations on a large material. In about 3 per cent of the cases of cholecystopathy microscopic hematuria could be detected. Characteristic symptoms were absent. The complaints gave just as much indication of a gastro intestinal disorder as of disease of the gallbladder. The author found it best, whenever the symptoms were not characteristic to refrain from instrumental urologic examination and first to employ other diagnostic aids. Of great help was roentgenography of the entire urinary tract. When no signs of a disorder of the urinary apparatus were found, roentgenography occasionally gave indications of an extrarenal disturbance, especially of the gallbladder. Whenever the roentgen examination gave no indications whatever either the gallbladder or the urinary tract was examined. In some cases intravenous cholecystography resulted in a correct diagnosis. In many cases a control examination of the urinary tract was made. However, in case of a disorder of the gallbladder there never existed a disturbance in the urinary tract. In spite of the microscopic hematuria the urinary tract was found healthy. When the cholecystopathy was cured and following operative removal of the gallbladder all cellular elements disappeared from the urine. This proved the correctness of the diagnosis pseudorenal disease. On the basis of these observations the author stresses that whenever a cholecystopathy is probable, cholecystography should precede the more serious instrumental urologic examination.

Primary Sarcoma of Heart.—Duncke reports the clinical history of a man aged 26. The first symptoms indicated a

gastric disorder and later pulmonary symptoms appeared. Because roentgenoscopy of the lungs revealed pulmonary tumors, a primary cancer of the stomach with pulmonary metastases was thought of. Exploratory laparotomy revealed that the stomach and duodenum were free from pathologic changes. The patient died. The necropsy revealed a spindle cell sarcoma of the heart with metastases in the lungs. It seems surprising that in spite of the great extension of the sarcoma in the heart cardiac symptoms were not observed. However, in several other reports on tumors of the heart in which the right auricle was nearly completely obliterated, signs of congestion were likewise absent. The author thinks that the gastric symptoms, which were predominant in the case reported were caused by an increased irritability of the vagus. On the left side this nerve was completely surrounded by tumor masses. The pulmonary symptoms which were thought to be due to a tuberculous infiltrate were the result of pulmonary metastases of the primary sarcoma of the heart.

Strahlentherapie, Berlin

38 591 806 (Nov. 29) 1930

- High Voltage Roentgen Irradiation. Decrease in Intensity of Rays in Body. M. Dornreich—p. 591
Cancer. Comparison of Results of Single and of Fractional Irradiation. J. Juul—p. 623
Length of Roentgen Rays in Relation to Their Biologic Effect. F. Auerheller and J. A. Saralegui—p. 641
Short Electric Waves. Deep Action and Elective Tissue Action. F. Schliephake—p. 655
Action of Roentgen Rays on Eye. W. Rohrschneider—p. 665
Changes in Lungs Following Roentgen Irradiation. M. Ludin and A. Werthemann—p. 684
Changes in Myocardium Following Roentgen Irradiation. A. Werthemann—p. 702
Bleeding Mammary Gland. Radium Treatment. F. Dantwitz—p. 710
Tabetic Crises. Roentgen Irradiation. C. Kremsner—p. 719
Roentgen Irradiation of Vertebral Region in Various Skin Diseases. A. Kravski—p. 730
Roentgen Castration of Women. C. Fritschl—p. 739
Instrument for Graphic Representation of Plane of Irradiation. W. Schaefer and E. Witte—p. 767
Treatment of Severe Roentgen and Radium Burns. K. Cruminger—p. 775
Hardening of Infra-roentgen Rays by Air. H. T. Meyer—p. 778
Technic of Treatment with High Frequency Current. H. Hubner—p. 785
Arrangement of Radiologic Institute of University of Freiburg. E. Albrecht—p. 789
Roentgen Treatment in Diseases of Blood. L. Siciliano—p. 791

Cancer. Comparison of Results of Single and of Fractional Irradiation.—Juul describes experiments that he performed on white mice with inoculation cancer to compare the effects of a single roentgen or radium irradiation with the effects of fractional irradiation. As an index of the action of the irradiation he used three criteria, namely, the rate of growth of the tumor, the number of animals in which the tumors were made to disappear and the average length of life of the animals in which the tumor persisted. He found that with both roentgen and radium rays the results obtained when the irradiation was given in one large dose were better than they were when it was given in fractional doses.

Changes in Lungs Following Roentgen Irradiation.—Ludin and Werthemann studied the changes produced in the lungs of twelve rabbits by roentgen irradiation of the thorax. They summarize their observations thus: In all of the rabbits there was noted a bronchopneumonia with severe suppurative bronchitis. The alveolar epithelium underwent degeneration characterized by swelling and vacuolar degeneration of the protoplasm and disappearance of the nuclei. In the region of the bronchopneumonia areas there was marked pulmonary edema with desquamative catarrh. In the bronchial epithelium marked proliferation was noted in some places the epithelium had become stratified and its growth had resulted in the production of carcinoma like pictures with numerous atypical mitoses, cell polymorphism and pyknosis and disintegration of the nuclei.

Changes in Myocardium Following Roentgen Irradiation.—Werthemann divides the changes that he observed in the myocardium of rabbits following roentgen irradiation of the heart thus: (1) parenchymatous injuries which include simple cloudy swelling with loss of the transverse striation, degeneration of the cells with disappearance of the fibril striation

atrophy of the muscle fibers proceeding in some to their complete disappearance and simple disappearance of the nuclei with marked diminution in the number of nuclei in the degenerated parts and (2) changes in the interstitial connective tissue, which include perivascular and extensive diffuse inflammatory infiltration and the formation of milium and sclerotic indurations.

Tabetic Crises Roentgen Irradiation—Kremser describes the technique he used in the roentgen irradiation of the spinal cord in forty-four persons with tabetic crises. In eleven of the patients the treatment was without effect. In four of them, slight improvement was noted. In twenty of the patients there was marked but only temporary improvement. Nine of the patients were completely free from symptoms for a long time. The observation of Ahringsmann and Illig that in the majority of cases the improvement is preceded by an increase in the intensity of the prisms was not confirmed.

Wiener klinische Wochenschrift, Vienna

13 1493 1524 (Dec. 4) 1930

- Obstetrics in Private Home F. Kermauner—p. 1495
 Von Basch's Theory Regarding Increase in Lung Volume on Account of Congestion in Heart Disease and Regarding Diminished Permeability of Lungs from Cardiac Congestion A. Froehlich—p. 1499
 *Primary Closure of Abdominal Wall in Appendectomy A. Muller—p. 1501
 Increase in Efficacy of Diuretics Containing Mercury F. Berger—p. 1505
 Certain Peculiarities of Latest Influenza Epidemic C. A. Lewina—p. 1508
 Tuberculosis in the Aged Treatment A. Muller Dehm—p. 1510

Primary Closure of Abdominal Wall in Appendectomy

—On the basis of eight years' experience Muller discusses whether primary closure of the abdominal cavity or drainage gives the best results in appendectomy. Tabular reports indicate that if drainage is used there is a certain percentage of fatalities, whereas without drainage the mortality is zero. The author thinks that drainage is done too frequently and that primary closure of the peritoneum and of the subcutis should be done in all cases of acute appendicitis without severe complications. In gangrene or perforation of the appendix the number of cases in which primary closure without drainage was done is still limited. However, the experiences in a small number of such cases speak for primary closure. The author asserts that drainage retards the healing process. He thinks that neither serous nor cloudy exudates necessitate a drainage tube, a strip of gauze or drainage thread. The gauze and the thread hinder the discharge of the secretion and cause congestion. And it is also probable that the presence of the foreign body leads to excessive secretion.

Zeitschrift f. Hygiene und Infektionskr., Berlin

111 659 775 (Nov. 18) 1930

- *Vaccination Encephalitis Effect of Poor General Condition on Course of Vaccination A. Eckstein and M. Sarvan—p. 659
 *Id. Permeability of Meninges in Normal Course of Vaccination A. Eckstein—p. 669
 Anaphylactic Shock Response to Antigen Stimulation S. Gartner—p. 672
 Diet of Students at University of Heidelberg H. Habs—p. 679
 Suicide Rate in Prussia R. Bandel—p. 699
 *Unipolarity of Air Ions A. Belak, S. Holik and S. Kelemen—p. 703
 Oral Infection of Mice with Gartner Bacilli I. J. Kligler and L. Olitzki—p. 711
 Undulant Fever Causal Organism R. Bieling—p. 728
 Two New Types of Paratyphoid Bacilli with a Hitherto Unknown Change of Phase F. Kruffmann and C. Mitsui—p. 740
 Types of Paratyphoid Bacilli Comparative Study F. Kruffmann and C. Mitsui—p. 749

Vaccination Encephalitis Effect of Poor General Condition on Course of Vaccination—Eckstein and Sarvan observed the course of intracutaneous vaccination in three control monkeys, in four in which the spleen had been removed in three with chronic hunger and in three with chronic alcohol poisoning. In the control animals the local reaction appeared on the third or fourth day following the vaccination and healed in from eight to twelve days. The blood of the animal treated with the smallest amount of lymph showed on the twenty-first day the greatest virucidal power. The blood of the two other animals also showed a positive virucidal power. The local reaction in the animals with chronic alcohol poisoning did not differ from the reaction in the control animals. The

fasting animals showed a retarded local reaction and the vaccine pustule tended to undergo ulceration and healed slowly. In two of the animals that were successfully vaccinated it was found that twenty-one days after the vaccination the virucidal power of the blood was increased. In a third animal with a greatly lowered general condition the vaccination was unsuccessful and the virucidal power of the blood was not increased. In two of the splenectomized animals the course of the vaccination was the same as that in the control animals. In one animal the vaccine pustule did not appear until the sixteenth day after the vaccination and it persisted twelve days. On the forty-fifth day a recurrence with pustule formation appeared and underwent ulcerative degeneration. In the contents of the pustule it was possible to demonstrate the vaccine virus. The virucidal power of the blood was not increased. In another animal two vaccinations were not followed by the development of a local reaction although on the nineteenth day following the first vaccination the vaccine virus was present in the blood. In this animal also the virucidal power of the blood was not increased. None of the animals presented manifestations of a nervous disturbance. Even in the splenectomized animal that reacted with a recurrence in the form of a generalized vaccination and that died from the results of a puncture of the heart neither microscopic nor macroscopic examination of the brain revealed any manifestations of encephalitis. Emphasis is laid on the fact that although the course of the vaccination in the fasting and splenectomized animals was greatly disturbed it was not followed by the development of a so-called vaccination encephalitis.

Vaccination Encephalitis Permeability of Meninges in Normal Course of Vaccination—By means of Walter's bromine method, Eckstein demonstrated that in none of nine normal infants aged from 5 months to 1 year and 10 months was vaccination followed by an increased permeability of the meninges. Neither the number of the vaccination pustules, the intensity of the vaccination reaction nor the height of the body temperature was in relation to the permeability of the meninges. Since the bromine quotient in all the infants corresponded to the normal it is obvious that in the late nursing age vaccination is not followed by an increase in the permeability of the meninges.

Unipolarity of Air Ions—Belak et al. describe a method by means of which it is possible in a closed chamber to produce a unipolarity of the air ions. In experiments on human beings in which the blood pressure, the pulse, the frequency of respiration, and the physical and psychic capacity were observed, it was noted that these functions were not modified by unipolarity of the air ions.

Zeitschrift fur Kinderheilkunde, Berlin

50 259 380 (Nov. 22) 1930

- Alimentary Fever Sodium Chloride Fever H. Finkelstein and E. Weil—p. 259
 Id. Pharmacology of Protein Fever and Sodium Chloride Fever H. Finkelstein and E. Weil—p. 288
 Spastic Hemiplegia in Vaccination Encephalitis J. Duker—p. 297
 *Rickets Prognosis Alterthum—p. 296
 Colloidal Condition of Blood Plasma of Children in Health and Disease J. Jochims—p. 333
 *Significance of Organic Acids in Urine During Hunger H. Fasold—p. 367
 Amount of Organic Acids in Blood in Diphtheria and Scarlet Fever E. A. Wladimirova—p. 374

Prognosis of Severe Rachitic Deformities—Alterthum reports the results of after-examinations made in 1927 of twenty-four children who had been born during or shortly after the Great War and who, from 1920 to 1924, had been given intensive conservative treatment in a hospital for an average of 88 months. It was found that extensive retrogression of the visible rachitic deformities had occurred in the cranium, thorax and extremities. Measurements showed that in nearly all the children there was a longitudinal growth deficit corresponding on an average to a year's growth and that the sitting height, the circumference of the head and of the thorax and the transverse diameter at the shoulders and at the hips were too large. These changes in physique in children of early school age are considered characteristic for a previous rickets.

Significance of Organic Acids in Urine During Hunger

—According to Folsold, the elimination of organic acids in the urine during hunger can be stopped almost completely by the administration of free hydrochloric acid. The administration of alkalis, on the contrary, caused a marked increase in their elimination. The organic acids in the urine are for the most part excreted combined with bases. During hunger the amount of bound organic acids remains normal. Therefore even during hunger the excretion of free acid valences by organic acids is slight. The elimination of acids then occurs almost exclusively in the form of phosphates. From the effect of the ingestion of acids and alkalis on the amount of organic acids in the urine it is concluded that they are not always to be considered as a symptom of lowered metabolism.

Zentralblatt für Chirurgie, Leipzig

57 3025 3088 (Dec 6) 1930

Operations on Diabetic Persons Since Advent of Insulin M Flesch Thebesius —p 3026

Treatment of Postoperative Keloids with Radium M Matyas —p 3039

Ganglion Over Sternoclavicular Joint S Hofmann —p 3040

*Is There Any Relationship Between Ether Narcosis and Postoperative Lung Complications After Gynecologic Operations? E N Stahnke —p 3041

*Closure of Gastro-Enterostomy Opening by a Polypus C Hammesfahr —p 3045

Surgical Treatment of Idiopathic Edema of Extremities E Kondoleon —p 3046

Modification of Nissen's Hypospadias Operation Z Kauris —p 3047

Choice of Methods of Performing Gastro-Enterostomy A Gridnev —p 3048

Relation of Ether Anesthesia to Pulmonary Complications Following Gynecologic Operations—Stahnke failed to find any relationship between postoperative lung complications and ether anesthesia. Among 3,284 gynecologic operations, postoperative bronchitis developed in 124 per cent, bronchopneumonia in 0.88 per cent, pneumonia in 0.12 per cent. The decade 21-30 gave the greatest number, 141 per cent; the decade 51-60 the least, 81 per cent. Not a single case of aspiration pneumonia developed. The author is of the opinion that the site of the operation is of more moment etiologically than the kind of anesthetic used.

Closure of Gastro-Enterostomy Opening by a Polypus

—In November, 1925, Hammesfahr performed a gastro-enterostomy for pyloric ulcer. The patient did not get well, however, and in January, 1930, a second operation was performed. He remained fairly well until April when he manifested symptoms indicative of obstruction of the gastric outlet. Roentgen examination was negative. In May a third operation was performed. The cause of all the disturbance was a jejunal polypus about the size of a pigeon's egg freely movable, which would slip up into the gastro-enterostomy opening and cause a complete obstruction of the outlet with all the attendant symptoms. The tumor was removed and the patient made a complete and enduring recovery.

Zentralblatt für Gynäkologie, Leipzig

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Epidemic Meningitis in a New-Born Infant—Mathias reports the case of an infant who died several days after birth. At first the sudden death of the infant could not be accounted for and a necropsy was done. The brain was prepared with a solution of formaldehyde. Thus bacteriologic examination by means of the culture method was impossible. However, pus was detected on the brain stem and on the cerebellum. It was therefore thought advisable to examine the mother for the presence of meningococci. A pharyngeal smear

from the mother actually contained meningococci. The period of incubation is short in meningitis, lasting only from twenty-four to forty-eight hours, and it was assumed that the mother had infected the child shortly after birth.

Hemorrhages into Cervical Portion of Spinal Canal

in the New-Born—Rissmann relates that in a premature infant who died thirty-six hours after birth the necropsy revealed an epidural hemorrhage in the region of the lower part of the cervical portion and in the thoracic portion of the spine. In twenty postmortem examinations of new-born infants, such hemorrhages into the cervical portion of the spinal canal were observed in two cases, and in a supplement to this article a third case is mentioned. It is therefore probable that this phenomenon is comparatively frequent, and it should receive more attention.

Arkiv Biologicheskikh Nauk, Leningrad

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Influence of Various Poisons on Sympathetic Nerves

of Heart—Vasilenko's experiments were made on isolated hearts of frogs; the tested substances were dissolved in Ringer's solution. First Ringer's solution alone was perfused through the heart, and the normal cardiac contractions as well as the changes that occurred after stimulation of the sympathetic nerves were recorded. When the cardiac contractions returned to normal the tested solutions were perfused, and the action of the sympathetic nerves was explored. Perfusion of a proprietary chloral hydrate dextrose solution, in 1:200 or 1:300 concentration, soon caused arrest of the heart in diastole; successive stimulation of the sympathetic nerves induced group contractions. In an advanced stage of the poisoning no group contractions appeared in response to irritation of the sympathetic nerves. Then electrodes of an inducing current were applied directly to the heart. An increase of the cardiac contractions, appearing after a short period of latency, pointed to a positive inotropic action of the sympathetic nerves. A positive bathmotropic influence of the sympathetic nerves was ascertained by applying the electrodes directly to the heart with a current below its threshold of excitability. Arrest of the heart following a short increase of the contractions was induced with a 1:1,000 concentration of quinine hydrochloride. In the beginning of the poisoning, stimulation of the cardiac sympathetic nerves brought about group contractions; the contractions were always stronger than those before the poisoning. Application of electrodes to the heart when group contractions failed to appear, elicited a positive inotropic and bathmotropic influence of the sympathetic nerves; the refractory phase appeared notably reduced. Tetrahydronaphthylamine perfused in a concentration of from 1:1,000 to 1:3,000 first caused an increase of cardiac contractions. This was soon followed by a decrease of contractions and arrest of the heart whereby the auricles and the ventricle stopped simultaneously. Stimulation of the sympathetic nerves was sometimes accompanied by group contractions. In an advanced stage of poisoning the electrodes were applied directly to the heart and the contractions of the ventricle were then recorded; the results pointed to a positive inotropic and bathmotropic influence of the sympathetic nerves; there was reduction of the refractory phase. The action of veratrine consisted in the fact that a strong systole of the ventricle was slowly followed by a diastole so that there was one ventricular contraction to two or three auricular contractions. In the advanced stage of poisoning a complete discord between the activity of the auricles and that of the ventricle existed. The effect of veratrine was pronounced only when a 1:10,000 or a 1:20,000 solution was used for perfusion. The solution increased the cardiac contractions in the beginning of the perfusion; irritation of the sympathetic nerves then intensified and accelerated the contractions. In advanced stages of poisoning stimulation of the sympathetic nerves had

no influence on the heart. The effect of the sympathetic nerves appeared when epinephrine was then perfused through the heart. The results indicated that veratrine impairs the conduction of the sympathetic fibers, leaving intact the junctional tissue. The disturbed cardiac activity caused by veratrine poisoning was restored to normal by a perfusion with tetrahydronaphthylamine. The latter accelerated the appearance of ventricular diastole, hence the response of ventricular contractions to auricular contractions increased. The conclusions are drawn that perfusions of chloralose quinine and tetrahydronaphthylamine cause arrest of the heart. The arrest is connected with paralysis of the cardiac automatism whereby the sympathetic nerves remain intact. Stimulation of the sympathetic nerves is able to induce group contractions in the arrested heart in the beginning of poisoning. In advanced stages of the cardiac poisoning when group contractions fail, irritation of the sympathetic nerves exerts a positive inotropic and bathmotropic influence on cardiac contractions in case of a direct stimulation of the myocardium. Veratrine extends the period of myocardial weakness, causes a discord between the activity of the auricles and that of the ventricle and paralyzes the sympathetic fibers. The apparatus reacting to sympathetic poisons (junctional tissue) is unchanged.

Experiments Concerned with Regeneration of Chorda Tympani.—Lisevich's experiments were conducted on three dogs with a fistula in the ducts of the salivary glands. In two of these animals the chorda tympani was severed for the second time. It appeared that the interval between the operation and the beginning of functional restitution of the nerve, compared with that after the first severing of the nerve, was shorter by seven days. The interval between the operation and complete restitution of the nerve was shorter by seven or eight weeks and the interval between the beginning of the restitution and a complete functional restoration was shorter by six or seven weeks. The time required for regeneration of the nerve apparently did not depend on the interval between the first and the second severing, observed up to a year. Thus severing of the nerve appeared to create conditions in the nervous cells promoting proliferation of the fibers on a repeated severing. Moreover, impulses favoring the process of functional restoration may originate in the glandular protoplasm. In one animal the corresponding superior cervical sympathetic ganglion was removed before severing of the chorda tympani. There was evidence that the sympathetic nerve has not an appreciable influence on the time of regeneration of the chorda tympani, on the appearance of unconditioned reflex, on the viscosity of the saliva and on the amount of solid deposit therein. Conservation of a few fibrils of the chorda seemed to prevent the development of a paralytic salivary secretion, while the reflex secretion persisted.

Research on Embolism of Medulla Oblongata.—Veselin induced by means of a gradual embolism of the medulla oblongata paralysis of the respiratory center in dogs and in cats, then the animals were kept alive with artificial respiration. A 1 to 4 per cent solution of sodium chloride containing soot particles was used for induction of the embolism through the carotid. In most of the experiments, both vagus nerves were previously severed. The control animals were treated with curare and exposed to a slow asphyxia by a gradual decrease of artificial respiration; thus phenomena similar to those from embolism of the medulla oblongata were created. Owing to the artificial respiration the animals could be observed for hours. Paralysis of the respiratory center was followed by a pronounced lowering of the blood pressure, sometimes by one or two minutes (reduction of the vascular tonus). On exploration of the reactive ability, the vasomotor center of such animals did not react to asphyxia, to inhalation of carbon dioxide or to injection of lactic acid into the blood. On the other hand the vasomotor center responded promptly and markedly when the induced embolism was considerably increased; the reaction proved to be of mechanical origin. This is the result of lowering of blood pressure in the vessels of the respiratory center. Stimulation of the vasomotor center with chemical substances failed after the respiratory center was paralyzed. The mechanism of chemical excitability of the vasomotor center probably consists in irradiation of excitation from the respiratory center.

Acta Dermato-Venereologica, Stockholm

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- *Keratoses Follicularis Pigment Formation J. W. Mu—p. 365
- Actinomycosis Typical and Atypical Cases A. Jordan—p. 343
- *Thallium Acetate Intoxication A. J. Protopchouk, M. S. Bakhmetev and W. Chamchine—p. 385
- Gonococemia with Gonococcal Endocarditis Case O. Berner—p. 49
- Inductive Research on Larval Heredodysplasia O. Michaelis—p. 411

Keratoses Follicularis Pigment Formation.—Mu reports a typical case of keratoses follicularis (Darier's disease) in which he was able to study closely, for the first time in that disease, the process of pigment formation. In the early stage there is a pathologic stimulation of the pigmentary function, together with increased proliferation. As the characteristic changes in the cells of the malpighian layer become more pronounced the pigment formation becomes correspondingly feeble. The activity of the pigment-forming ferment then decreases markedly and only a small amount of pigment is produced. Along the edges of the overgrowths, the appearance of numerous dendritic cells indicates the process of reparation. The whole development shows that keratoses follicularis produces a marked disturbance not only of the function of keratinization but also of the pigmentary function.

Thallium Acetate Intoxication.—On the basis of experiments on guinea pigs and dogs and clinical observations in ten cases of thallium acetate intoxication in persons with favus or ringworm, Protopchouk et al. state that thallium preparations by their influence on the sympathetic nervous system produce a series of changes in the latter, which in turn act on the appendages of the skin, particularly on the hairs causing disturbances in the vessels of the hair bulbs. Like all other salts of the heavy metals thallium may produce a great many severe disturbances in the organism. In the skin there occur besides falling of the hair, folliculitis and a toxic eruption similar to the ones produced by mercury or bismuth and of a hemorrhagic character with petechiae and ecchymoses. In the mucous membranes besides gingivitis, glossitis and stomatitis (even in its ulcerative form) there occur the phenomena of a thallium angina. These changes may be accompanied by herpetic eruptions and rhagades on the lips, and diarrhea and severe pains in the abdomen. The mucous linings of the stomach and the intestine are hemorrhagic and the latter presents the picture of either desquamative or ulcerative colitis. Other changes noted are hemorrhages and thallium necroses in the liver and nephritis. Acting through the sympathetic nervous system, the thallium preparations may produce the phenomena of transient epileptiform psychosis termed chorea. They may also act directly and produce such phenomena as thallium polyneuritis and disturbances of the blood vessels, including the peripheral vessels of the brain and cerebral hemorrhage. The joints become painful, swollen, tender and crepitant. Fever may be present and the patient may become weak and emaciated.

Hygiea, Stockholm

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- *Posttraumatic Extrapyramidal Injury Case R. Melander—p. 87
- *Significance of Intravenous Pyelography in Diagnosis of Renal Tuberculosis I. Hellstrom—p. 836
- *Result of Surgical Treatment of Intestinal Tuberculosis A. Axelsson—p. 847

Posttraumatic Extrapyramidal Injury.—In Melander's patient with known trauma of the right shoulder, and trauma of the head originally considered insignificant by the patient, injury of the extrapyramidal system was indicated by the onset of a paralysis agitans like tremor, marked hemianesthesia of the right upper portion of the body and disordered tonicity of muscles of the right lower extremity.

Intravenous Pyelography in Diagnosis of Renal Tuberculosis.—In the four cases of renal tuberculosis described Hellstrom found intravenous pyelography useful in diagnosis in two of the cases it was of decisive value.

Result of Surgical Treatment of Intestinal Tuberculosis.—Axelsson's material shows that ileocecal tuberculosis is far more amenable to surgical treatment than is tuberculosis of the small intestine. Absolute freedom from symptoms was attained only in those cases of ileocecal tuberculosis in which radical intervention was done.

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PHYSIOLOGIC ASPECTS OF OPIUM ADDICTION*

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The etiology and subsequent events attendant on addiction to opium or such of its derivatives as are known to be habit forming are quite clear. Its continued use will most certainly at some time be followed by a distinct euphoria, so intense that few, if any who have ever experienced it can resist the desire for its return. Attempts to obtain from numerous addicts an adequate description of their feelings and emotions while under the influence of the drug has left much to be desired. "God's own medicine," a term frequently used by Osler, when he prescribed morphine, is a common expression used by the addict. Homer's *Odyssey*¹ contains a sentence which reads, "Whoe'er his wine so medicated drinks, he shall not pour all day the tears down his wan cheek, although his father and his mother both were dead, nor even though his brother or his son had fallen in battle, and before his eyes." Its effects have frequently been described as the bridge between ambition and accomplishment. "It makes you feel as if you were sitting on top of the world," is another favorite description. The nurse about to administer a hypodermic is universally described as an angel from heaven.

Despite the difficulty in ascertaining an adequate picture of the mind under the influence of opium, there is not the slightest doubt that repetition of its use is an effort to regain a source from the realities and hum-drum of life. This objective, when first desired, is obtained from the usual therapeutic doses. The effects last from three to six hours and are followed by nothing more than a return to normality and a vivid remembrance. Its frequent use, however, soon results in two definite departures from the preceding statement, namely, the therapeutic dose is no longer followed by the same intensity of the euphoria, and in turn with its disappearance the normal state is replaced by a definite train of symptoms, so well described in the literature,² known as the withdrawal symptoms. When a person has reached this stage in the use of opium he is described by addicts as "having a habit," or being

"hooked." The continuation of small doses will prevent the appearance of the withdrawal symptoms and maintain the unfortunate one in a comfortable state but lacking the intense euphoria. This procedure, however, is followed by a very small minority, the majority, seeking the "kick" or "thrill," rapidly increase the amounts taken until enormous quantities are reached.

If at any time the drug is abruptly withdrawn, regardless of the amounts used the withdrawal symptoms are inevitable. They reach their height about the end of the third day, then gradually subside, and disappear at the end of ten days or two weeks. With the disappearance of the withdrawal symptoms, tolerance has also disappeared and euphoria can and will be obtained from a therapeutic dose. Recourse to the drug at this point results in the same cycle again, a development of tolerance, a tendency for the disappearance of the euphoria and the return of the withdrawal symptoms following abrupt cessation of its use.

SOMATIC CHANCES

The resultant tolerance to amounts of opium or its derivatives that would prove fatal to nonusers, the intense craving and the constancy of the withdrawal symptoms attendant on the absence of the drug have led to a wide acceptance of the belief that addiction leads to bodily changes that are abnormal and harmful. This view is strengthened by the casual appearance of many addicts who appear shabbily dressed and present a picture of emaciation and general ill health. The fact that many of these unfortunate people are criminals, shrewd and crafty, with no sense of morals has added to this belief. On the other hand, Bishop³ and Kraepelin⁴ recognize the possibility of addicts escaping detection for years, if the general hygiene is good.

One of the first objectives in our studies of the various phases of the opium addiction problem was to find out definitely, if possible the existence of any physiologic or structural changes in patients with addiction of long standing. In all studies to be reported in this paper, the drug used was morphine and except when otherwise stated, was administered hypodermically.

Sufficient morphine was always administered to prevent withdrawal symptoms and to produce drug comfort. In practically every instance, this procedure with a well balanced diet rich in calories, was followed by marked gains in weight. Selecting 100 cases at random a careful physical examination resulted in absolutely negative returns except for scars of previous abscesses the result of infection from hypodermic punctures.

* From the Narcotic Wards of the Philadelphia General Hospital.
* Read before the Section on Pharmacology and Therapeutics at the Eighty First Annual Session of the American Medical Association, Detroit, June 26, 1930.

¹ Homer's *Odyssey*, book IV, verse 280. English translation by William Cowper, printed for J. Johnson, No. 72 St. Paul's Churchyard, London, 1791.

² Smith, C. H. Communication to Dr. Johnson. *Lancet* 1:707, 1841-1842. Levinstein, E. *Die Morphiumsucht* 1878, p. 14. Sollier, P. La demorphinisation et le traitement rationnel de la morphinomanie. *Semaine med.* 1894, p. 146.

³ Bishop, E. S. *Narcotic Drug Problem*. New York: Macmillan Company, 1920, p. 47.

⁴ Kraepelin, Emil. *Lectures on Clinical Psychiatry*, ed. 3, translated from ed. 2 (German), revised and edited by Thomas Johnstone. London: Baillière Tindall and Cox, 1913.

found in about 70 per cent. We were unable to detect a single sign or symptom suggestive of drug action. In many of the patients the pupils were contracted, a few, however, failed to show this condition. Careful measurements of the height and weights showed an average of 0.2 per cent above the normal compared to the average normal weight accepted by life insurance companies. Studies of vital capacities, efficiency tests, heart and circulation, the blood, metabolism, endocrine functions, kidney and liver function, gastro-intestinal tract water balance in fact all the modern clinical tests to determine changes in physiologic function, were carried out in a sufficient number of cases to lead us to the conclusion that addiction to opium or its derivatives does not produce any abnormal or harmful changes in physiologic mechanisms.⁵

In addition to these studies we were fortunate to be able to study a severe case of lobar pneumonia in one addict. Throughout the period of fever, crises and convalescence, a daily dosage of 15 grains (1 Gm.) was administered. The physical signs, clinical chart studies of the blood, character and duration of the illness were identical with that of a severe case of lobar pneumonia in a nonaddict.

TOLERANCE AND FATE OF MORPHINE

The development and existence of tolerance to opium and its derivatives has been recognized for many years. De Quincey⁶ stated that at one period in the history of his drug addiction he used 133 drachms (500 cc.) of laudanum, or approximately 72 grains (4.7 Gm.) of morphine daily. Cognizant of the frequent unavailability of the addict as to the daily amounts used as well as his inability to tell accurately because of frequent adulteration by peddlers, we carried out a series of experiments to test the extent of tolerance in patients before the drug was withdrawn. During the period of administration, careful observations were made continuously on the pulse, respiration and blood pressure as well as on the patient's general condition. One addict received 30 grains (2 Gm.) of morphine intravenously in two hours and twenty-four minutes. At the end of the last injection there was no change in the blood pressure, pulse rate, respiration, chemical condition of the blood or electrocardiographic tracing. His usual dose during this period would have been 4 grains (0.26 Gm.) so that he was tolerant to at least seven times the dose he was accustomed to receive.⁷ Several addicts receiving 15 grains (1 Gm.) of morphine daily were raised to 60 grains (4 Gm.) daily within a period of three to five days without any detectable changes in physiologic behavior or function. These additional amounts did not prolong the absence of the craving.

Proof that this tolerance is still present forty-eight hours after abrupt withdrawal is found in several experiments in which the drug was administered in dosages similar to those given prior to this period. In one addict 20 grains (1.3 Gm.) was administered intra-

venously in fifty-six minutes. Not a single patient showed any significant reaction except immediate relief from the withdrawal symptoms and a return of a feeling of well being.

On the other hand, evidence that tolerance has disappeared following complete cessation of the withdrawal symptoms is based on the death of one of our patients and the collapse of two others, when, following their discharge from the hospital, amounts similar to those used before treatment were again used. The majority of addicts are aware of this change in tolerance, a factor frequently present in the seeking of treatment. It is almost universal on their part to request on approximately the fourth day of their treatment a small dose, usually a quarter grain (16 mg.) to help them from their extreme depression. What we believe they really are seeking is an accurate gauge of their own tolerance. The rapidity in the apparent improvement and enthusiastic endorsement of the treatment that frequently follows the "pick-up,"—the term used by the addict for the quarter grain of morphine—is undoubted evidence in favor of this view. His tolerance is gone, a quarter grain is again sufficient to produce the euphoria. The object of his treatment has been attained.

Studies of the mechanism of tolerance were first inaugurated by Faust,⁸ who concluded from work on dogs that the animal body developed the capacity to destroy increased amounts of morphine, thus preventing damage to vulnerable tissues. Further experiments by Rubsamen⁹ on rats led him to accept Faust's theory in part, but to believe that in addition there must be a certain amount of tolerance developed, as he was able to recover sufficient morphine from tolerant rats to kill nontolerant rats. Terruchi and Kai,¹⁰ confining their studies to rabbits, accept the postulate of increased destruction but finding large quantities of morphine in the muscles and only traces in the liver and brain, attribute to the tolerant body the power of increased destruction, and a mechanism in the muscles that rapidly removes the morphine from the blood and prevents it from attacking the central nervous system.

Our studies¹¹ in this field consisted in the administration of dosages of 15, 30 and 60 grains (1, 2 and 4 Gm.) daily to addicts and the measurement of excretion in the urine and feces. Fecal morphine elimination was very irregular and fell far below that of the urine. In the urine, however, regardless of the amounts administered, we were always able to recover practically 10 per cent of the amount given, that is, 90 per cent was returned or destroyed. Thus there is always the same relationship between the amounts taken and amounts eliminated in the urine. That the 90 per cent is changed into something else than morphine is based on several experiments, where immediately following abrupt withdrawal of the drug only 10 per cent of the last dose could be recovered, and this again within a period of four hours. The end of this rapid decline in excretion coincided with the return of the craving and the appearance of the first signs of withdrawal symptoms.

5 Light A. B. and Torrance E. G. *Opium Addiction. II. Physical Characteristics and Physical Findings of Addicts During Administration of Morphine.* Arch. Int. Med. 43: 326-334 (March) 1929. III. *The Circulation and Respiration of Human Addicts During the Administration of Morphine.* ibid. 43: 556-567 (April) 1929. Karr W. G. Light A. B. and Torrance E. G. *Opium Addiction. IV. The Blood of the Human Addict During the Administration of Morphine.* ibid. 43: 684-690 (May) 1929. Light A. B. and Torrance E. G. *Opium Addiction. V. Miscellaneous Observations of Human Addicts During the Administration of Morphine.* ibid. 43: 878-889 (June) 1929.

6 De Quincey, Thomas. *The Autobiography and Confessions of an Opium Eater.* Old English ed. London: George Newnes Limited, p. 640.

7 Light A. B. and Torrance E. G. *Opium Addiction. VIII. The Effects of Intramuscular and Intravenous Administration of Large Doses of Morphine to Human Addicts.* Arch. Int. Med. 44: 376-394 (Sept.) 1929.

8 Faust E. S. *Ueber die Ursachen der Gewohnung an Morphin.* Arch. f. exper. Path. u. Pharmacol. 44: 217-1900.

9 Rubsamen W. *Experimentelle Untersuchungen über die Gewohnung an Morphin.* Arch. f. exper. Path. u. Pharmacol. 59: 227-1908.

10 Terruchi Yutaka and Kai Sotaro. *On the Fate of Morphine Which Has Been Injected into the Animal Body.* J. Pharmacol. & Exper. Therap. 31: 177 (June) 1927.

11 Light A. B., Gray Edith C., Torrance E. G. and Wolff W. A. *Opium Addiction. X. The Excretion of Morphine by Human Addicts.* Arch. Int. Med. 44: 862-869 (Dec.) 1929.

Similar studies were carried on in addicted dogs in the Laboratory of Pharmacology of the University of Pennsylvania by several members of our staff and practically identical results obtained. In addition, studies of the excretion in normal dogs were made by Wolff, Riegel and Fry.¹² It was found by these investigators that the amounts recovered in the urine and feces from normal dogs was no greater or less than that found in addicted human beings or dogs. Their inevitable conclusion was that tolerance to morphine is not characterized by a significant increase in the capacity to destroy morphine.

WITHDRAWAL SYMPTOMS

The constancy and similarity of the withdrawal symptoms, the extreme variation in intensity, their dramatic disappearance following readministration of the drug and rapid return of a feeling of well being are all features of this phase of the problem that are well recognized. They have in turn been responsible for the controversy that exists concerning the etiology of the symptoms. One group holds strongly to the belief that the whole picture is one of hysteria, similar to the hysteria of the child who is deprived of its toy and is promptly seized with an attack of vomiting. Those holding to the other belief insist on somatic changes due to deprivation of the drug just as there is a failure to burn sugar in the absence of sufficient insulin.

By means of the same methods of study used during the administration of sufficient drug to detect somatic changes, the same addicts were again studied following a period of forty-eight hour abrupt withdrawal and again after readministration and return of the feeling of well being.¹³ The following measurable changes were found: losses of weight ranging from 3 to 15 pounds (1.4 to 6.8 Kg.), concentration of the blood, and a polymorphonuclear leukocytosis in 60 per cent of our cases in one case reaching 28,000 per cubic millimeter. All other tests were negative, including tests of physical fitness, despite the fact that the addicts complained of extreme weakness. Following the return of well being after morphine was again administered the loss of weight was still present, the blood concentration was unchanged, and in those cases in which a leukocytosis was present the total number of leukocytes had actually increased, the person showing 28,000 now reaching 30,000. Despite the fact that the addict again professed to feel well and strong the tests of physical fitness showed a poorer response.

Studies¹⁴ in water balance, checked with a similar study on normal persons, led us to the conclusion that the loss of weight was due in a large degree to the failure on the part of the addict to take food and water during the period of withdrawal together with a degree of restlessness. This undoubtedly accounts for the blood concentration as well. Neither the blood concentration nor the leukocytosis can be held as responsible for the state of ill being as both these changes were still present following the readministration of the drug and the return of the state of well being.

The intensity of the symptoms can certainly be controlled by the addict himself, even to the degree at which they are scarcely perceptible. One addict under going treatment in our ward appeared to suffer intensely and exhausted our patience to the utmost. A year later, when he was arrested as a shop lifter and known to be addicted again the police surgeon was unable to detect any withdrawal symptoms except a slight diarrhea. The addict was well aware that, could the charge of drug addiction be substantiated, he would face an additional sentence.

This is but one of numerous experiences which have led us to the belief that addicts will and can control to a large degree the intensity of their withdrawal symptoms. This factor together with the largely negative results obtained in our studies of the withdrawal symptoms lead us to believe that they are frequently complicated by hysteria and that further studies should be combined with psychiatric and psychologic investigations.

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TREATMENT OF DRUG ADDICTION *

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NEW YORK

To confine drug addiction only to the habitual use of opium derivatives is too narrow a conception. It is really the habitual use of any drug for the purpose of avoiding emotional strains of life.

In its mildest form it is manifested by the habitual taking of the hypnotic group of drugs, in its more intense narcotic forms it is seen in the excessive use of alcohol or of the opium alkaloids. The causation is the same in all instances the difference being only one of degree the psychologic demand being for forgetfulness of life's worries, or even the obliteration of all consciousness to escape the misery and unhappiness of existence.

It is immaterial whether custom and public opinion condone alcoholic drunkenness and condemn morphine addiction, the basic principle of causation for the two is the same.

The mildest form of drug addiction to dodge the unhappiness and unsolved problems of life is the use of the hypnotic group. Formerly chloral was used today it is usually some one of the many members of the barbituric acid group.

Chloral taken alone, or mixed with bromides, produces its harm by causing an inaccuracy of mental judgment and even delusions and distortions of outlook. The bromides although usually thought harmless produce a distinct delusional psychosis when taken to excess. The danger of the barbituric acid group is that perversion of personality which frequently occurs in those who take them in the usual hypnotic doses. The mildest exhibition of this is seen in the perversity and resistance of these patients. They prefer to say the mean and sharp thing rather than to be agreeable, they are antagonistic to all suggestions they are suspicious, ill tempered, selfish and cranky, and they cause a great deal of unhappiness and misery to themselves and to others.

Read before the Section on Pharmacology and Therapeutics at the Eighty First Annual Session of the American Medical Association, Detroit June 26 1930.

¹² Wolff W. A., Riegel C. and Fry Edith G. The Excretion of Morphine. *Am. J. M. Sc.* 177: 306 (Feb.) 1929.

¹³ Light A. B. and Torrance E. G. Opium Addiction. VI. The Effects of Abrupt Withdrawal Followed by Readministration of Morphine in Human Addicts with Special Reference to the Composition of the Blood, the Circulation and the Metabolism. *Arch. Int. Med.* 44: 116 (July) 1929.

¹⁴ Light A. B. and Torrance E. G. Opium Addiction. IX. Water Balance and the Withdrawal of Morphine. *Arch. Int. Med.* 44: 693-699 (Nov.) 1929.

The great majority, however, of recurrent morphine addicts today are found among constitutionally inferior personalities, the so-called inadequate psychopathic group. In the work of the Mayor's Committee on Narcotic Addiction in New York City in the last year, it was found that 87 per cent of the 318 addicts coming under their care for study were of this inadequate psychopathic type, 42 per cent tended toward the dementia praecox type. There were also the types of criminalism, of nomadism, and of manic-depressive tendencies, but there were only 13 per cent who seemed to possess the average stabilized personality designated as normal. These inadequate personalities are not necessarily inadequate in their intelligence. They vary, of course, in the degree of their emotional sensibilities and their emotional reactions. Their intelligence does

Chart 1—In this and the accompanying charts *A* indicates gastro intestinal symptoms consisting of nausea and vomiting abdominal cramps and diarrhea *B* muscular discomfort aches and twitches *C* restlessness mental and physical with increased psychomotor activity *D* prostration (subjective and objective weakness). The charts are redrawn from charts used in the report of the Mayor's Committee on Drug Addiction New York City 1929. In this chart the sections at the top present a comparison of four major withdrawal symptom groups (*A B C D*) under Narcosan solid line Narcosan broken line control. Below is a composite graph of the four major symptom groups solid line Narcosan sixty eight cases broken line control sixty eight cases average of 100 controls in all the charts *a* indicates period on morphine which was stopped and treatment begun as indicated by heavy vertical line.

Alcohol is thus more frequently used than morphine. It can be used to its full narcotic power, then set aside, and used again when memories are too unhappy. It is

not control their actions and their actions are based on the emotional impulse and remain uncontrolled by their intelligence however clever their degree of intelligence may be. They are not legally insane, but they show the same anomalies in their mental make-up as the insane. They differ only in degree, and they form the most trying problems of today in their proper care and treatment.

The recent work of Torrance and Light in Philadelphia has shown conclusively that there is no such

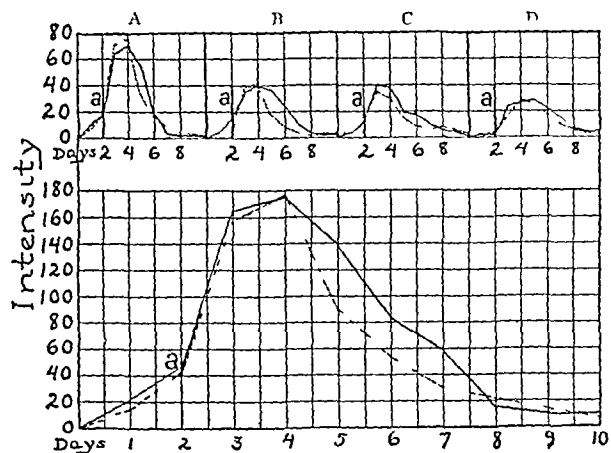


Chart 2—Above comparison of four major withdrawal symptom groups under atropine solid line atropine broken line control. Below composite graph solid line atropine twenty five cases broken line control twenty five cases, average of 100 controls

thing as an addiction disease, their work has shown that the physiologic processes in the bodies of those addicted to morphine do not vary from the average conditions found in nonaddicted persons. Their investigations under the New York Committee for the Study of Drug Addiction also showed that there were no physical neurologic changes found in these addicts. These apparently negative results are of the highest value, as they are the positive scientific evidence that an addiction disease produced by morphine does not exist. This fallacy had taken such hold of both the lay and the medical mind that the work of these men cannot be too strongly praised for its value in clearing up a much mooted question.

The work of the Mayor's Committee on Drug Addiction in New York City was undertaken to test the best method of treatment of the morphine addicts. The work formerly done in the penitentiary on Welfare Island in New York in the treatment of these addicts by Narcosan was continued. This work had been done without sufficient control. We believed that our knowledge of the symptoms of the withdrawal of morphine was sufficient to be used as a control. We had heretofore always controlled the withdrawal symptoms by codeine and did not realize the definite limitation of the withdrawal symptoms to from seventy-two to ninety-six hours' duration. From the results of our recent work in Bellevue Hospital on the Mayor's Committee, it is evident that this view had been an error of judgment, and the careful, strictly controlled observations of the Mayor's Committee have shown accurately the value of the various methods of treatment and of the drugs used in the treatment of morphine addiction.

In the accompanying charts all observations have been translated into curves showing the intensity and duration of the various symptoms during withdrawal

of morphine. It is evident from these curves that the withdrawal symptoms of morphine are self limited to from seventy-two to ninety-six hours.

One hundred patients were treated as controls. Narcotics were not given unless a patient was threatened with a serious collapse during his withdrawal period, sterile water, containing a little glycerin and colored with a few grains of bismarck brown to make it the same color as the Narcosan solution was given and neither the nurses who gave the injections, nor the patients themselves, could tell whether a control solution or the medication was being given. The injections were run parallel, and this removed from the patients all sense of fear that they were not receiving some narcotic treatment and definite medication. This enabled us to judge the reactions following the treatment as being the real withdrawal symptoms. The work on Narcosan thus strictly controlled was continued.

Scopolamine and atropine were also tested in a similar manner since these two drugs form the basis of nearly all treatments for morphine withdrawal. The reduction treatment of morphine was also taken up, in which no drug treatment was used, but the morphine gradually but surely reduced. A short experimentation followed with the use of codeine to relieve the symptoms of withdrawal of morphine. All these separate tests required time in a small ward, with but few patients at any one time. But with strict control, perfectly accurate estimates were obtained. The symptoms were divided into four classes: (1) the gastrointestinal group, with nausea, vomiting, abdominal cramps and diarrhea, (2) muscular discomfort with aches and twitching, (3) restlessness, mental and physical, and increased psychomotor activity, (4) prostration, with subjective and objective weakness.

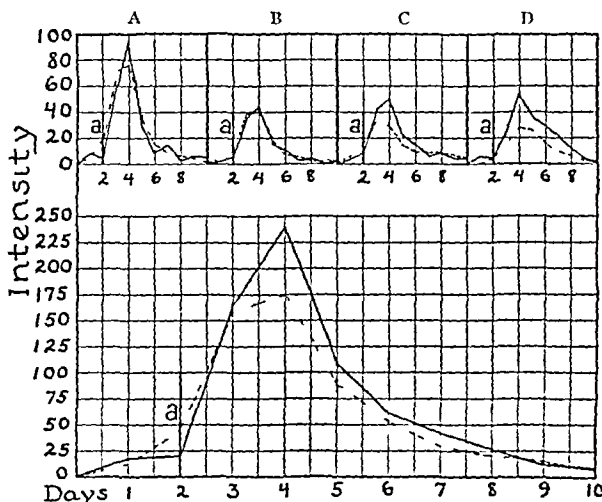


Chart 3—Above comparison of four major withdrawal symptom groups under scopolamine solid line scopolamine broken line control. Below composite graph solid line scopolamine twenty five cases broken line control twenty five cases, average of 100 controls

The accuracy of the observations was carefully checked, one man alone judging the symptoms and another man deciding which patient should be a control and which should receive the treatment under observation. The nurses in charge did not know what treatment was being given.

The results of the treatment show that the gastrointestinal symptoms under Narcosan are much increased over the controls, muscular discomfort with aches and

twitching comes earlier with the use of Narcosan, rises higher, and then diminishes equally with the others, the restlessness is practically the same with Narcosan as in the controls, the prostration during the entire treatment is slightly more noticeable under Narcosan than in the controls

The next drug to be tried as a treatment was atropine. It is evident from the curves that those receiving atropine show about the same intensity of symptoms as the controls but that the recovery from their symptoms is prolonged, and that they recovered more slowly from their symptoms under atropine than did the controls. The gastro-intestinal reaction is less severe under atropine, the muscular discomfort is not quite as severe but lasts distinctly longer, restlessness, however, is more intense under atropine than in the controls, and prostration occurs more quickly, and, while not more prolonged is slightly more intense.

Under scopolamine it is evident that patients suffer more than the controls, their suffering does not begin as soon, it rises to its climax at the end of forty-eight hours of treatment, and the gastro-intestinal symptoms are markedly increased under the scopolamine. Muscular discomfort is practically the same as in the

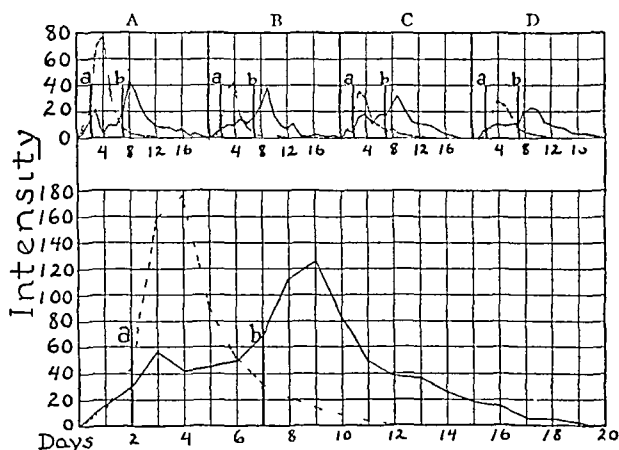


Chart 4—Above comparison of four major withdrawal symptom groups during seven day reduction solid line seven day reduction broken line control. Below composite graph solid line seven day reduction twenty five cases broken line control twenty five cases average of 100 controls. Vertical line marked b shows end of seven day reduction.

controls, and their restlessness and delirium and mental and physical activity are enormously increased under scopolamine, as well as is their prostration, which is more intense in all periods of the treatment, beginning earlier, and lasting considerably longer. These results agree with our previous clinical experience, that patients being taken off morphine under the scopolamine treatment suffer for days, or weeks, from a bodily and mental exhaustion that is one of the most marked features of the treatment.

A seven-day reduction of morphine was tried in which the patients, as compared with the controls, suffered materially less. But while their suffering was less intense it was more prolonged, and at the end of the seven days, when they were cut off their drug, the withdrawal symptoms flared up acutely, but with marked diminution in intensity in all patients. The patients, however, were less easy to care for, they were irritable, mean, more quarrelsome, and more difficult in every way to manage. It is interesting that after the morphine was cut off from these patients, as the curve shows, they still had about seventy-two hours of increase of symptoms.

In a fourteen-day reduction, it is noticeable that the gastro-intestinal symptoms are reduced to a minimum, the muscular discomfort, however, increased, with a rising curve toward the day on which morphine ceased to be given, at the end of two weeks, and then flared up for forty-eight hours and rapidly diminished, restlessness was diminished in comparison with the controls, but in a rising curve, until it also disappeared, prostration shows a similar curve, but to a less degree.

The next method of treatment was an endeavor to ascertain to what extent codeine would control the withdrawal symptoms of morphine. Our clinical experience had taught us that codeine does control them and that it is so rapidly discharged from the body by the kidneys that it is not stored up as long as morphine, nor does it possess the narcotic value to the human organism that morphine does. It produces sleep, it alleviates pain to a marked degree, but that curious narcotic value it does not possess, and codeine habits are exceedingly rare. In 1,700 patients in private practice, treated for many different narcotic addictions to the various habit forming drugs of the opium group and the hypnotic chemical group, it was found that only ten of them were addicted to codeine, and these had required it through their endeavor to alleviate pain.

In those receiving rapid reduction with codeine, the curves show that at the end of the week, when the morphine was cut off, there were the regular three days of increase of symptoms after the codeine was also cut off, but these symptoms do not rise as high as those in the fourteen-day reduction, nor as high even as the symptoms after a seven-day reduction.

Since these experiments have been carried on at Bellevue, it has been found in private practice that if the codeine is continued a few days beyond the morphine and is tapered off rather rapidly, that is, in four or five days, the symptoms are reduced to a minimum, although there is a sense of irritability and restlessness. Even that is of little consequence compared with the usual withdrawal symptoms. In other words, the withdrawal symptoms do not go beyond the intensity of the disagreeable restlessness produced by the cutting off of any narcotic. The gastro-intestinal symptoms disappear, the muscular discomfort is at a minimum, the restlessness is the most marked of the symptoms, but that soon ceases. It is evident, therefore, that codeine is the only drug we have as yet found that really modifies materially and successfully the withdrawal symptoms of morphine.

The best method of giving this treatment is to calculate the amount of morphine, in terms of Magendie's solution, that a patient is taking in twenty-four hours and then for a ten-day reduction, diminish the morphine each day about one-tenth. As the morphine is best given at four hour intervals, and there are six doses a day, the total daily amount is again divided by 6, and the amount of reduction is easily calculated in the number of minims of Magendie's solution. For instance, if the patient is taking 4 grains (0.26 Gm) a day the equivalent to 120 minims a day of Magendie's solution, he is taking 20 minims every four hours, if he is to be reduced 12 minims a day, he is reduced each day at each four hour dose 2 minims of his Magendie's solution, in this way in the ten days his Magendie's solution is brought down to zero.

But at the same time that his morphine is reduced, the codeine is increased from the second day beginning at $\frac{1}{2}$ grain (0.03 Gm) every four hours the first codeine day, then 1 grain (0.065 Gm) every four

hours the second day, then 3 grams (0.2 Gm) every four hours the third day, 4 grams (0.26 Gm) given every four hours the fourth day, and 5 grams (0.3 Gm) every four hours the fifth day, continued at 5 grams every four hours until three days after the last dose of morphine has been given when it is tapered off as rapidly as the discomfort of the patient permits. It is wise to use the codeine phosphate because of its greater solubility, and if the codeine solution is made up in the same form as Magendie's solution it is easily accessible

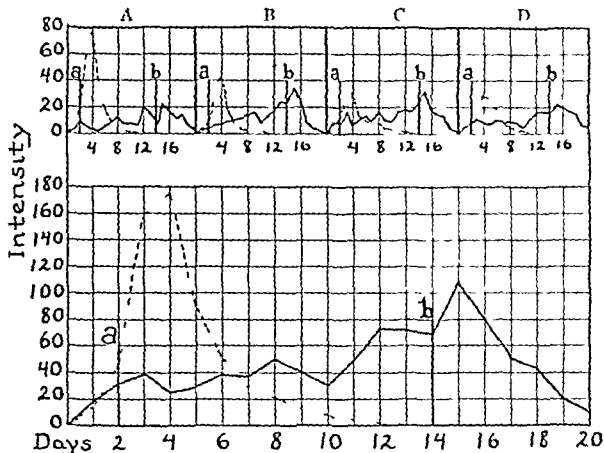


Chart 5—Above, comparison of four major withdrawal symptom groups during fourteen day reduction solid line fourteen day reduction broken line control Below, composite graph solid line fourteen day reduction twenty five cases broken line control twenty five cases Vertical line marked b shows end of fourteen day reduction

and desired amounts can be given every four hours simultaneously in the same syringe as the Magendie's solution. In this way the patient does not know when the morphine ceases to be given to him. If this amount of codeine is not sufficient, extra doses of codeine can be given without harm to the patient or to his reduction treatment. This large amount of codeine is apt to be very constipating, and the patients should receive the amount of cathartic necessary to keep their bowels in good action, severe purging is not necessary under this form of treatment, and it is apt to irritate the gastro-intestinal tract. Of course, the patient's intestinal tract should be thoroughly cleaned out before the treatment is begun, it is also wise to test out the patient for the first twenty-four or forty-eight hours of treatment with the amount of morphine that the patient says he is taking, to see whether or not he is comfortable.

The advantage of this codeine and morphine treatment is that since the patients suffer so little there is no occasion for deception, there is no question of a defense reaction for fear of suffering, they get away from their drug without the irritability and fear of suffering that the abrupt methods and old forms of treatment give them and they are quite manageable.

Of course if one is dealing with patients who do not want to recover, who do not want to be taken off it one is dealing with a large mass of psychopathic addicts with inadequate personalities who make no attempt at reconstruction, one will encounter every sort of deception and every known form of resistance and lack of cooperation. But in private practice with those who have been caught in the toils of the narcotic habit through legitimate medication or through the existence of pain, this treatment is easily administered in a hos-

pital and the patients can easily be taken off their narcotic.

All morphine patients, after they are once off, should be reconstructed physically as well as psychologically, and the best method of accomplishing this is through physical exertion exercise or work. While building up into good physical condition, the sooner they are occupied with the rearrangement of their psychologic distortions, the better and the more quickly they will be able to face existence cheerfully without their drug.

Sleep comes to addicts gradually during their period of treatment, and in the restless period of the few days as their morphine is cut off, or then codeine diminished, hypnotics are very difficult to administer. Sodium amytal and practically all members of the barbituric acid group, if given in sufficient amounts really to make patients sleep and to influence at all the withdrawal symptoms, must be given in amounts that poison them, and in the endeavors to obtain sleep for these patients the poisoning from the various hypnotics given even to the point of delirium, has been a noticeable feature. It is harmful, in my opinion, to push hypnotics as far as this, it only adds to the poisoning of the patient, and does not relieve the withdrawal symptoms but adds to the difficulties of handling the situation.

Chloral from 25 to 30 grains (1.6 to 2 Gm), with codeine 1 or 2 grains (0.065 or 0.13 Gm), tincture of hyoscyamus, 30 minims (2 cc), is a very useful hypnotic for these patients, but even this cannot be continued too long. Patients must be made to fight out their lack of sleep by endeavoring to read, or by taking hot baths, or applying hot packs, all of which will relax them. They gradually obtain more and more sleep each night and if they can be made to take tonic baths in the day time or physical exercise, they can, through exertion obtain their sleep more quickly than otherwise.

The question is often asked: What can be done for the inadequate group of personalities that form the

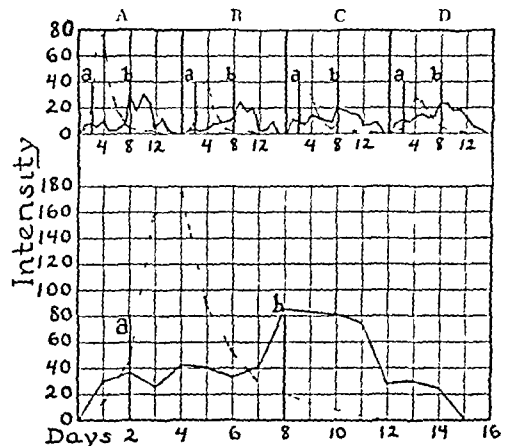


Chart 6—Above, comparison of four major withdrawal symptom groups under rapid reduction with codeine solid line rapid reduction with codeine broken line control Below, composite graph solid line rapid reduction with codeine twenty five cases broken line control twenty five cases Vertical line marked b shows end of treatment by means of rapid reduction with codeine

ever recurrent narcotic addicts in the penal institutions? It is only through forced confinement, learning some trade and working at some definite occupation that these patients can be trained and reconstructed. Occupational therapy in forced confinement is the best solution. This will slowly regenerate a larger number than can otherwise be restored. If at the same time in

endeavor is made to take these patients individually to reconstruct their distorted mentalities and twisted views of life, a great deal can be done to diminish their number. But this is a problem that should be undertaken by the state, just as the state today undertakes the care of the mentally diseased. These individuals, to be regenerated, should be treated as unable to lead a normal existence, not as if they were in a boarding house for permanent care but as though they were mentally ill and must be reconstructed through persistent treatment.

It is at present hopeless to attempt to take care of certain individuals among drug and alcoholic addicts without the power to deprive them of their liberty and force them through institutional care and reconstruction to reorganize themselves and their mentalities. This at present the law does not permit, but, until it is done, many inadequate personalities will continue to seek their peace of mind in narcotic addiction.

43 East Seventy-Second Street

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. LIGHT AND LAMBERT

DR. WILLIAM H. MAYER, Pittsburgh. The neuropsychiatrist views the morphine addict much as many other things that happen in his experience. The failure of individuals to succeed in the matter of spiritual comfort and to be content with the reality is relative. I refer to this because of the type of case mentioned by Dr. Light, particularly the individual who does not look forward to excess but is content with a small dose of morphine to assist in his adjustment. As has been clearly shown in a former study, to which Dr. Lambert has also referred, the question of addiction disease is a matter of conjecture. I believe that all the proof is that there is no addiction disease. I intended to take issue with Dr. Lambert at times when he compared alcoholic and morphine addiction as a common type. Our group insists on making discriminations a little finer, although, in the main, one must agree with the broad principle that reality and flight therefrom governs both habits. One practically never sees the stage of tolerance in alcoholism that unquestionably occurs in a morphine addiction. It is possible that the somatic changes in alcoholism which are not seen in morphinism are responsible for the failure of elimination and also explain lowering of tolerance in the alcoholic addict, which is never seen in the morphine addict. What Dr. Lambert said concerning treatment is true. I went through the narcozan period and there became acquainted with the fact that withdrawal symptoms were largely emotional reactions, and suggestion controlled many of the cases. Actual collapse occurred in some cases, but I am willing to believe that similar collapses occurred from other causes than from physiologic changes pursuant to the withdrawal of morphine. There is another group, which includes those suffering from periodic pains of true tabes dorsalis, who have received arsphenamine and yet have obscure crises of pain relieved only by morphine. Once removed from the habit and free from the pain, there was no effort made to take the drug. With the recurrence of the pain, another cycle of morphine habit was begun. A considerable percentage of morphine addicts examined by spinal puncture give interesting observations to support the belief that this group exists. As Dr. Light points out these individuals become enamored with the feeling of euphoria and proceed to use the drug in order not only to be free from pain but to enjoy a state of lethargy, but this is only a specter, and the moral collapse that occurs is due to the social experiences surrounding the drug habit.

DR. G. WILSE ROBINSON, Kansas City, Mo. I am glad the authors have included in this discussion other forms of drug addictions besides morphinism and alcoholism. There are various reasons why people use alcohol, narcotics and sedative drugs excessively. The matter of maladjustment has been mentioned. The majority of those who use drugs and alcohol to excess do not meet well the realities of life. Many of those

who use alcohol excessively are subject to attacks of mental depression—a mild form of manic depressive psychosis. We all, more or less, crave the experiences, sensations and the thoughts of our childhood, during our childhood experiences we have autisms and fantastic thoughts, we have ideas that carry us beyond reality. We crave that in our adult life. Those people, especially introverts, who do not meet realities well seek that situation by morphinism and alcoholism, it gives them the autism and fantastic thoughts of childhood and helps them to banish the realities of life, which may be very painful to them. Morphine and alcohol are sedatives that act especially on the small pyramidal cells of the cerebral cortex, they alter the thought processes. The urea preparations, of which barbital and phenobarbital are the best known and most widely used, have a different action. They act on the brain stem and mid brain, on the thalamic centers and the thalamic motor areas. In 1909, Dr. Lambert published what has been known as the Lambert treatment. I tried it out and the results were so satisfactory that I have used the treatment regularly since that time. I have tried many other forms of treatment for alcoholism and morphinism but have never been able to find a treatment that works so well. I have used it on patients of all ages and degrees of physical condition, without harmful effect. Aged patients and those who have used large quantities of morphine for many years respond well to this treatment.

DR. ALEXANDER LAMBERT, New York. I would like to mention the difference between the action of codeine and the action of morphine for the alleviation of pain. Codeine, if it is used with the analgesics, I mean acetphenetidin and either acetylsalicylic acid or sodium salicylate, and then using sodium bicarbonate with them, is one of the best forms of medication that I know to stop pain. Patients can be carried through their various forms of crises without the use of morphine and they do not acquire a habit with codeine. In about 1,700 cases of all kinds of habits, I found that in only ten of those patients was codeine used as a habit per se with which to relieve the pain. It does not have the narcotic value that morphine has. It is eliminated rapidly by the kidneys. It is methyl morphine and does not combine with the nervous tissues as the ethyl radical does. It is a most useful drug, especially combined with those analgesics, and it should not be included in the habit-forming drugs. It is because it comes from opium that it is so classed. That is the lay point of view, which is difficult to change. But it does not have that peculiar narcotic value and can be used with the greatest benefit in combination and in tiny doses or in big doses, as the case may be, depending on the individual. The treatment Dr. Robinson mentioned is useful if the staff can be trained to give it definitely and not make mistakes. It is full of details. If understood well and manipulated well, with intelligent nurses that one can hold and keep and train in one's own institution, it can be manipulated better than anything else I know. It has given me excellent results. But if all these conditions cannot be obtained, I have found that the reduction with codeine seems to answer the same purpose and it can be given by a routine hospital treatment. It seems at present to be the best available.

The Revival of Heliotherapy—Worship of the sun was known to the ancients long before the Christian era and was practiced not only by the barbarian races but by cultured Egypt. We are told that the father-in-law of Tutankhamen gave up other gods for the worship of the Sungod Ra and built a new city and temples to his honor. The Greeks and Romans, while not worshipping the sun, understood its health giving properties. Hippocrates practiced heliotherapy on the island of Cos in the fourth century B. C., and from 130 to 200 A. D. it was practiced at Rome by Celsus and Galen. Cicero has described for us the solarium built at the villas outside Rome. The solarium was usually a flat terrace or roof designed to trap the maximum of sunshine. The Druids in our own islands were also sun worshippers. The cult of the sun was apparently regarded as pagan for with the advent of the Christian era sun worship fell into abeyance. It is only comparatively recently that its value has again been recognized—MacCarvill, Patrick. Ultraviolet Light, X-Rays and Radium as Therapeutic Agents, *Irish J. M. Sc.* February 1931.

BLADDER DIVERTICULA

WITH ESPECIAL REFERENCE TO THEIR
SURGICAL REMOVAL *

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CHICAGO

A diverticulum of the bladder is a cavity in closest relation to it produced by a localized dilatation of its wall. Diverticula are characterized by a definitely circumscribed opening which represents the connection between the cavity and the bladder, and by a mucous lining which is continuous with that of the bladder.

Vesical diverticula have been classified into various groups: congenital and acquired, true and false, solitary and multiple, and traction diverticula. They have been divided into those of the dome, of the lateral walls, and of the floor of the bladder.

Some authors have grouped these sacs as congenital and acquired, basing the division on the layers present. Klebs,¹ Englisch² and Rokitsansky³ stated that the presence of all layers of the bladder wall designated a diverticulum of congenital origin, while in the acquired type there was merely a prolapse of the mucosa between the muscle fibers. Hinman⁴ states that the classification of Englisch and Rathbun⁵ into true and false diverticula cannot be made, and he believes that they are all acquired. Kneise⁶ says that the overwhelming majority are surely not of congenital origin, and that at most the anlage for their formation is present in embryonic life. He stresses the fact that the weakness in the muscularis is a site of predilection for the formation of diverticula. Thomas states that at least 80 per cent are acquired through some obstructive process. Opposing this opinion, Lower considers most of them congenital.

Embryologic studies by Keibel,⁷ Reichel⁸ and Retterer⁹ afford at the most only suggestive hypotheses. The experimental work of Rose showed that diverticula are congenital to the extent that a loose fibrous pathway must be present through the bladder wall before the acquired factor, namely, a raised intracystic pressure, can herniate the mucosa. Lowsley and Gutierrez¹⁰ state that "it would seem, therefore, that there is a possibility that vesical diverticula are primarily congenital, although there is a greater likelihood of their manifestation during late adult life, which may be due to the occurrence of factors inducing abnormal tension within the bladder."

Herbst and his collaborators, as a result of numerous experiments on dogs, state that "increased intracystic pressure during micturition such as may be produced by spasmodic contractions of the detrusor muscle due

to infection or other causes of increased muscular irritability is a third factor which evidently plays an important role in the formation of diverticula." They were apparently first to emphasize the importance of infection in the production of these sacs in persons in whom obstruction alone had not done so.

Most diverticula are acquired, but they occur at a point of congenital weakness of the bladder wall through which herniation may occur if one or both of the acquired factors operate. The openings of most diverticula are located in the vicinity of the ureteral orifices. Hinman found the openings of 98 of a series of 135 solitary diverticula and 25 of a group of 28 multiple sacs in this neighborhood. Diverticula not infrequently occur at the site of the urachus. Those involving the posterior wall of the bladder are uncommon, but those of the anterior wall are rarest of all.

Diverticula vary in size from one containing but a few cubic centimeters to cavities containing several cubic decimeters, and they may greatly exceed the size of the bladder itself. Potherat¹¹ reported a case in



Fig. 1 (case 1).—Anteroposterior cystogram showing indistinctly presence of diverticula.

which the diverticulum contained 5,500 cc and Warren-Green¹²—one containing 3,700 cc. The size of the orifice varies considerably and bears no relation to the size of the sac itself. Formerly, it was thought that the orifice of a congenital diverticulum had definite characteristics but this does not seem to be true.

Vesical diverticula may have various shapes, those most commonly seen are round, ovoid, finger-like or bizarre, depending often on conglutination between the sac and the surrounding structures. They are usually solitary, but 10 per cent of cases reported presented multiple diverticula. As many as seven have been recognized in one patient. The two sides of the bladder are about equally affected. In 88 per cent of vesical diverticula observed in men, the bladder was trabeculated, evidencing overwork from an obstructive process.

The relation of the surrounding structures to the diverticulum is extremely important from the point of view of surgical removal. Adhesions may bind them

* From the Michael Reese Hospital and the Edward Hines Jr. Hospital.

¹ Klebs cited by Englisch (footnote 2).
² Englisch J. *Centralbl f. Klin. Chir.* 1894, p. 658.
³ Rokitsansky C. *Lehrbuch der pathologische Anatomie* 3, 48, 1805.
⁴ Hinman Frank. *Surg. Gynec. Obst.* 29, 150-174 (Aug.) 1929.
⁵ Rathbun N. P. *Diverticulum of Bladder Containing Large Calculus* *J. Urol.* 12, 181 (Sept.) 1924.
⁶ Kneise O. and Schulze R. *Ztschr. f. urol. Chir.* 10, 461 (Jul.) 1922.
⁷ Keibel Franz K. J. *Arch. f. Anat. u. Physiol.* 1898, cited by Paschke Robert. *Handbuch der Urologie* Vienna Julius Springer 1928, p. 45.
⁸ Reichel Frederick. *Die Entwicklung der Harnblase und Harnrohre* Wurzburg Stiel 1893.
⁹ Retterer Edward cited by Keibel (footnote 7).
¹⁰ Lowsley O. S. and Gutierrez Robert. *Operative Intervention for the Relief of Diverticulum of the Urinary Bladder* *J. Urol.* 19, 459 (April) 1928.

¹¹ Potherat E. *Proc. verb. tenth session of French Urological Association Paris* 10, 412-418, 1907.

¹² Warren-Green cited by Targett J. H. *Brit. M. J.*, 1893.

to important intra-abdominal organs or to large blood vessels.

The ureter may empty into the diverticulum, as in one of our cases but this is a rare occurrence and a special technic is required for the removal of such a sac. Hinman in 1919 reported but fourteen cases from the literature, including two which he himself had observed.

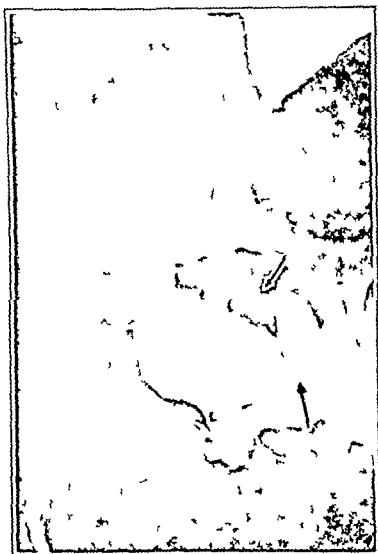


Fig. 2 (case 1)—Lateral view of same case showing moderate sized bilateral diverticula

The conglutination between the ureter and the diverticulum results from the increase in size of the diverticulum. The ureter is pulled in its long direction and its lumen is narrowed or markedly displaced. As the diverticulum enlarges, the ureteral orifice becomes further away from the opening of the diverticulum.

PATHOLOGY

The walls of the diverticula in the series here reported uniformly show all layers of the bladder wall, however, with certain changes which may best be described by quoting the pathologists report of typical cases. 'In general, the sections showed the following changes. Some of the sections still showed transitional lining cells, which in some fields were apparently hyperplastic. A few sections showed metaplasia of the lining cells. The mucosa and submucosa as seen in most of the slides were infiltrated by lymphocytes, endothelial cells and occasional polymorphonuclear leukocytes and a few plasma cells. There was a varying amount of connective tissue combined with a new formation of small blood vessels. Other sections showed islets of muscle fibers in the walls of the diverticulum. Some of these fibers were atrophic.'

The thickness of the wall depends almost entirely on the degree of inflammation present. Sacs which have been the site of infection are much thicker than those in which the inflammatory reaction has been mild. However, as a result of stretching, the walls may become quite thin and in fact may perforate. This thinning is evidenced by flattening of the lining epithelium of the mucosa.

The muscular coats may become greatly thinned and in places entirely lacking or merely show microscopically the remnants of muscle fibers. This extreme thinning of the musculature is especially noted in the fundus of the diverticulum.

The changes in the epithelial lining are due partly the stagnation of urine, the cells become saturated; subsequently loosened.

Leukoplakia of the lining of a diverticulum has been reported by Blum.¹³

Infection of a vesical diverticulum deserves special emphasis as usually the first symptoms manifest themselves when infection has occurred. It is readily seen that the physical characteristics of diverticula make them a site of predilection for infection. The practical impossibility of overcoming or curing the infection, once it has taken place, is obvious for the same reason, viz the position of the diverticulum, its relative narrowness, and the contractions of the orifice.

The source of the infecting bacteria is not at all easy to determine, as is the case in many urinary infections. Likely sources are the prostate, urethra, rectum and instrumentation. Hematogenous infections occur. The diverticulum may become infected from the bladder or vice versa. English and others have reported isolated infection of a diverticulum. This observation, we believe, would be very difficult to prove, and if this phenomenon does occur, it is purely of academic interest. Severe infections may occur with phlegmonous processes in the wall of the diverticulum, leading to perforation into the peridiverticular tissues and occasionally into the peritoneum (English).

Chronic infection always produces an inflammatory reaction in the neighborhood of a sac, and produces



Fig. 3 (case 2)—Anteroposterior cystogram showing diverticulum in which right ureter emptied

adhesions of varying grades and character, later becoming very fibrous.

Associated is the presence of stone or tumor within the diverticulum, instances of which are not uncommon. We have observed one case in which the stone projected from the diverticulum for approximately 2.5 cm, and

¹³ Blum, V. Chirurgische Pathologie und Therapie der Harnblase Divertikel. Thieme 1919.

the part within the sac was somewhat larger than the protruding portion. Similar stones have been diagnosed as encrusted carcinomas of the bladder. The presence of stones complicates the situation because they occur in the more severely infected cases. Occasionally a decubitus ulcer of the wall ensues with the increased possibility of perforation, and usually more marked adhesions are present. Tumors that have been found



Fig. 4 (case 2) —Lateral view of same case showing relative size of diverticulum

within diverticula are angioma, papilloma, sarcoma and carcinoma.

The symptoms of vesical diverticula are not characteristic and usually appear merely as disturbances of urination depending on the associated pathologic changes as they have been outlined. They are usually symptomless unless infected.

Not infrequently, functional disturbances of micturition occur because of changes in the musculature of a large diverticulum.

Dysuria of an intermittent course for a long period of years is a suggestive symptom. The presence of a diverticulum may be suspected if, after the bladder has apparently been washed clean, definite turbidity of the irrigating fluid suddenly appears. The necessity of emptying the bladder twice in a short time may be regarded as a suggestive symptom. Retention of urine can occur from a diverticulum compressing the vesical neck.

Bleeding as a result of infection, ulcer, stone or tumor within a diverticulum may be noted.

Strangury, dribbling, incontinence and a sensation of not having emptied the bladder may be present but have nothing characteristic in their occurrence, associated symptoms or sequence. Occasionally a patient will state that he can void only when assuming unusual positions or with the assistance of external pressure. This phenomenon is likewise not characteristic as it

may occur in the presence of vesical stone or prostatic hyperplasia in the absence of a diverticulum.

The diagnosis of bladder diverticula cannot be made by obtaining a characteristic history of the condition, as this does not exist. The subjective symptoms are so indefinite as to be entirely untrustworthy.

The diagnosis is properly made by cystoscopy and is confirmed and augmented by cystograms. The orifice of the diverticulum is readily identified and its relative location can be determined by cystoscopy alone. Occasionally the beak of the cystoscope can be introduced into the sac itself and all characteristics of the cavity can be noted. The passage of a shadowgraph catheter into the sac is of great value at times, and often a considerable length of the catheter can be coiled in the diverticulum. Roentgenographic studies then made will give an excellent impression of the size and relations of the sac. A series of cystograms affords the best method of accurate diagnosis, especially in those cases in which cystoscopy is impossible or difficult. The details of the technic of cystography will not be here described, but the complete technic as described by Blanc and Negro¹⁴ will produce valuable roentgenograms which will afford accurate diagnosis of the size, shape and position of the sac. Intravenous urography will undoubtedly disclose many unsuspected vesical diverticula and should be especially valuable in examining cases with infection in which instrumentation may be dangerous. Roentgen exposures of the bladder area should be made in the lateral and semilateral as well as the supine position. Stereoscopic films are often of additional value.

TREATMENT

Nonsurgical procedures are of little value in the treatment of diverticula and should be employed only



Fig. 5 (case 3) —Lateral view of bladder showing coiled shadowgraph catheter in diverticulum, stone in bladder lying horizontally and large stone in lowest portion of ureter lying vertically.

when operative intervention is definitely contraindicated by the poor general status of the patient, in which cases the prognosis of radical resection of the diverticulum offers too great a risk.

Judd¹⁵ states that "those who have had the most experience with these cases seem to be unanimous in

14. Blanc and Negro. La cystographie. Paris: Masson & Cie 1926.
15. Judd, E. S. Diverticula of the Bladder. Ann. Surg. 68: 197 (Sept.) 1918.

the feeling that the proper treatment for any of these diverticula is complete excision of the sac, and that any treatment less radical will not be satisfactory. Our experience bears this out."

OPERATIVE TECHNIC

Operation for diverticulum of the bladder in those cases in which operation is definitely not contraindicated



Fig. 6 (case 3)—Anteroposterior cystogram of same case showing diverticulum. Both stones are obscured by filling fluid

should include the complete surgical excision of the sac or sacs and also removal of the source of the obstruction, usually at a later period, depending on the status of the patient and the nature of the obstructing process

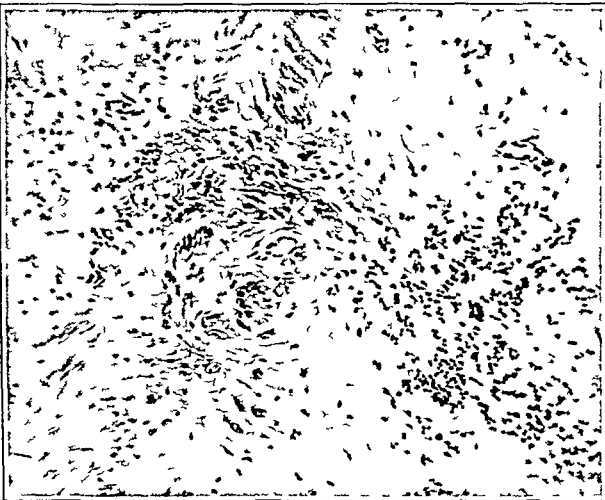


Fig. 7—Section showing isles of muscle fibers surrounded by connective tissue. One part shows a rather dense infiltration of lymphocytes, very few endothelial cells and an occasional leukocyte

The surgeon operating on a vesical diverticulum should have definite knowledge of all possible circumstances regarding the particular case at hand. We refer particularly to the number, size, location and relations of the diverticulum. Even then, it may be necessary to modify the intended technic on account of circumstances first manifesting themselves during the course of the

operation. Without attempting to discuss the merits of the various methods employed, we have been uniformly successful in completely resecting the sac in all cases attempted by the following technic, with necessary modifications, depending on the individual peculiarities of the case.

Spinal anesthesia has been used in the more recent cases of the series. The relaxation obtained by this method of anesthesia, and the collapse of the intestines, making it unnecessary to hold them back forcibly by retractors or other means, combined with the more moderate type of the patient's respirations, as compared with those during any method of inhalation anesthesia, have contributed in our opinion to the ease and relative safety of the operation.

A moderate to extreme Trendelenburg position was used in all cases. Preliminary drainage of the bladder by catheter or suprapubic tube has not been used except in cases of prostatic enlargement and only for the same reason as it is indicated in prostatic hypertrophy. We feel that Judd's statement is accurate: "Drainage of the bladder even as a preliminary step will seldom help enough to warrant its being done." The bladder is



Fig. 8—Metaplasia of lining cells. The cells are typically squamous in type

filled with sterile water or a mild antiseptic solution, such as mercuric oxycyanide, 1:10,000.

A midline incision of ample length is made down through the bladder as for cystotomy. The peritoneum is reflected upward with the gauze-covered finger as far as necessary for the particular case. In some instances we have found it desirable to do a complete extraperitonealization of the bladder. This has been accomplished in some instances by cutting and doubly ligating the urachus and then bluntly dissecting the peritoneum from the bladder wall. In others it was necessary to follow Voelcker's technic of extraperitonealization.

After the peritoneum has been freed from the bladder by finger dissection, the diverticulum, still filled with water and the bladder still unopened, is freed as far as possible from the perivesical fat and other structures. This part of the operation, we believe is of prime importance, and the ease or difficulty with which it is accomplished depends on the extent and degree of adhesions surrounding the sac. This step is particularly difficult if the sac is thick walled and if there is a marked degree of infection and organized fibrous tissue present. Haste at this time is not advantageous. Cases

in which the entire sac can thus be freed extravasically are those in which the adhesions are few or easily detachable and are suitable for extravasical resection. The bladder is then emptied by the catheter left in place. The mouth of the diverticulum, including a cuff of normal bladder wall, is circumcised and the sac removed in toto. The bladder can then be explored by the finger and if no further operation is contemplated, such as prostatectomy or resection of the vesical neck, the bladder may be closed.

This is done in the usual manner of closure used after prostatectomy, namely, closure by two layers of sutures, care being taken to invert the mucosa. A large drain is left as high as possible in the bladder. Drainage is left to the site of the fundus of the sac that has been removed. This is of great importance and should be adequate. We have found large Penrose tubes or bullet drains satisfactory. The space of Retzius is likewise drained. These drains are left in for at least four days.

Diverticula that are markedly adherent to the surrounding structures and cannot be freed in their entirety require a slightly different method of approach. Most of our cases belong to this class and the technic used was as follows.

All steps are similar to those already described including the freeing of the sac, which in this type of diverticulum cannot be entirely accomplished extravasically. Therefore the bladder is emptied as before and opened between Allis clamps. The orifice of the diverticulum is visualized and stretched with 8-inch forceps so as to admit the index finger of the left hand. Then with the left index finger within the diverticulum and one or two fingers of the right hand outside the bladder, the sac in most cases can be entirely



Fig 9—Squamous cells moderate fibrosis of submucosa and infiltration of lymphocytes endothelial cells and occasional leukocytes

freed. It then may be inverted and resected intravascularly or it may be removed extravasically, as has been described. In certain instances, even with this technic it has not been possible to free the fundus of the sac, either on account of its depth or because of the extreme degree of its adhesions. In these cases we have used a modification of the technic described by Marion and Lowrey and Gutierrez

namely, making an incision to the neck of the sac and also into the sac in its long axis so that the adherent portion is made readily accessible. We have found it necessary to incise the sac in its long axis, so that only from three-fourths to an inch remained unopened, and this small fundus was then separated from the surrounding tissue. Closure of this wound in the bladder is done as has been described and the drainage is the

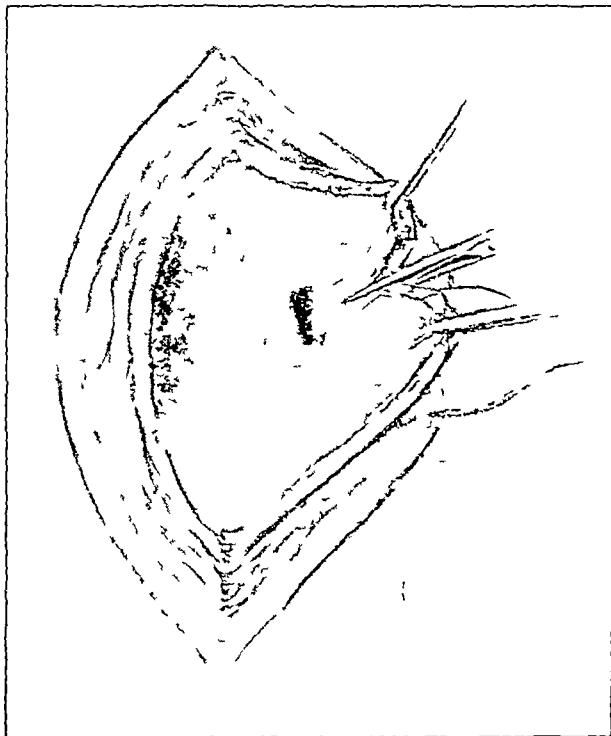


Fig 10—Incision of bladder wall to neck of diverticulum

same. In one case into which the orifice of the ureter opened, the method described by Hugh Young¹⁰ was followed minutely and effected a complete cure. The details of the technic will not be repeated here.

In cases in which the diverticulum involves the dome of the bladder and when the peritoneum cannot be stripped from the bladder wall or from the diverticulum, it is necessary to open the peritoneum before incising the bladder. Then after making the repair of the peritoneum by uniting the two leaves together, or suturing them low down on the posterior wall of the bladder, the resection of the diverticulum usually proceeds readily, unless the diverticulum is of excessive size.

During the enucleation of a diverticulum the vas deferens or the ureter or both may be exposed and great care must be used to preserve their integrity. Occasionally the sac may be adherent to important blood vessels and may not be detachable without grave risk of injury to them. In such cases it may be necessary to leave the fundus of the diverticulum in situ, this may be done without jeopardizing the success of the operation.

REPORT OF CASES

The following cases are typical of the different varieties encountered in a series of fourteen.

CASE 1—W, a man aged 38 had passed gravel and had been operated on for vesical stone at another hospital. He

complained of burning and difficult urination. This case is rather unusual as the source of the obstructive process was undoubtedly stricture of the urethra, following traumatic rupture of the urethra at the age of 13. Cystoscopic examination showed the opening of a diverticulum above and medial to each ureteral orifice. Some cystitis was present. Both ureteral orifices were normal except for partialing in the general inflammation present and catheters passed readily to each pelvis. Roentgenographic examination—anteroposterior cystograms—did not reveal either diverticulum seen at cystoscopy, but lateral and semilateral cystograms visualized two moderate sized sacs.

CASE 2—M F a man, aged 40 entered the hospital on a litter on account of multiple arthritis of undetermined origin, and under routine examination was referred to the urologic department for study of the genito-urinary tract. Cystoscopic examination revealed a moderate grade of generalized cystitis. The left ureteral orifice was normal and the right ureteral opening was not located, but in the neighborhood was seen an orifice apparently 0.5 cm wide opening into a large diverticulum. Roentgenographic observation showed a large diverticulum on the right side of the bladder. At operation the right ureteral orifice was found in the diverticulum.

CASE 3—H, a man, aged 44, entered the hospital on account of difficulty and burning on urination. He had had sounds passed several years before for strictures in the membranous and penile urethra. Cystoscopy revealed the large orifice of a diverticulum lateral and distal to the right ureteral orifice and into it a considerable length of a shadowgraph ureteral catheter was coiled. There was seen a large vesical stone

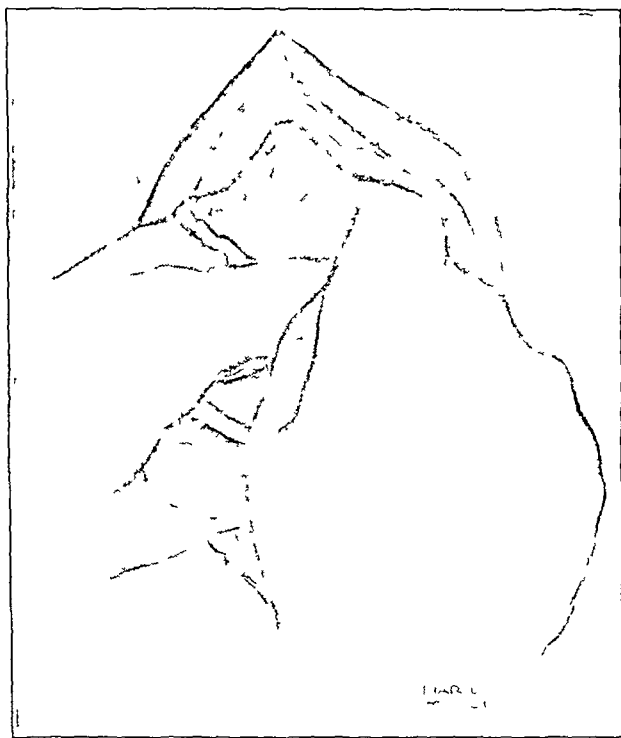


Fig 11—Finger of left hand deep within sac. Bimanual enucleation of sac.

present resting on the trigon. Cystograms revealed a large diverticulum of the right side of the bladder. Flat roentgenograms showed the coiled shadowgraph catheter, the large stone in the bladder and the shadow of a similar stone which proved to be in the lowest portion of the ureter.

CASE 4—M C a man, aged 76, entered the hospital on account of difficulty of urination, hematuria and inability to empty the bladder. He had been rising three or more times a night for at least eleven years. Cystoscopic examination revealed the usual observations of a trilobar prostatic enlargement with marked trabeculation. Midway on the right lateral

wall was seen a stone projecting about 2 cm into the bladder. It was touched with a ureteral catheter but could not be dislodged from its position. At operation it was found to be part of an elongated finger-shaped stone practically filling a diverticulum of similar shape.

CONCLUSIONS

1 Increased intracystic pressure due to obstruction or infection or both play an important role in causing

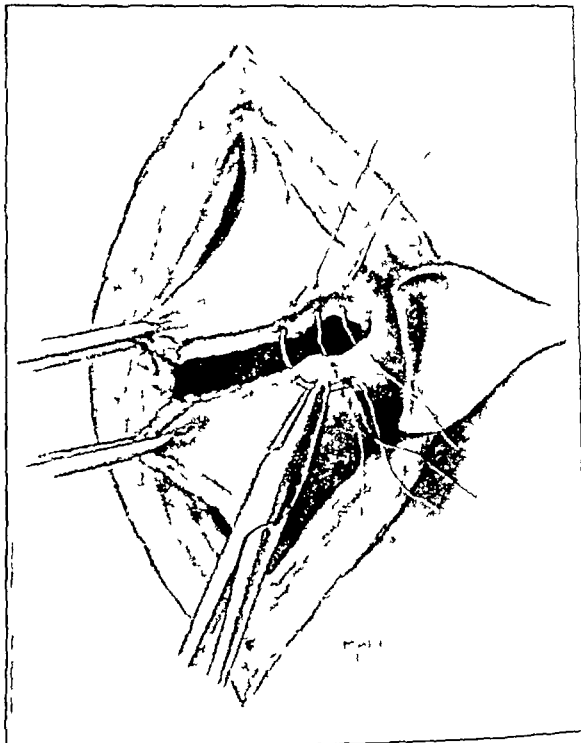


Fig 12—Appearance of bladder wound after excision of diverticulum including zone of normal bladder wall. Beginning closure by interrupted chromic catgut sutures.

herniation of the bladder through a congenitally weak area.

2 Congenital diverticula show no histologic characteristics to differentiate them from the acquired type.

3 There is no diagnostic subjective symptom of bladder diverticula. Dysuria over a long period of years, and the necessity of emptying the bladder twice in a short time, may be considered suggestive symptoms.

4 Cystoscopy and cystography are the two important methods of diagnosis.

5 Complete surgical removal is indicated in all cases in which the general condition warrants operative intervention.

6 Preliminary drainage accomplishes little in preparing a patient for radical resection.

7 The technic described, with necessary modifications, has proved satisfactory in our hands.

25 East Washington Street—55 East Washington Street

The Emotions of Men—The individual who finds life most dull and uninteresting is the one whose every need is provided for. He never enjoys life because he never misses anything he is never given a chance to really want. He is without motive without ambition. And how could it be otherwise? Ambitions are not stirred, aspirations are not kindled, unless there are desires strong but unsatisfied, unless there are objects, alluring but out of reach, objects which beckon and tantalize by receding when we would embrace them.—I and Frederick, H. *Emotions of Men*, New York McGraw-Hill Book Company, Inc. 1930

THE TREATMENT OF EDEMA

EFFECT OF CALCIUM GLUCONATE ON EDEMA
IN CHILDREN *

WILLIAM S O'DONNELL, MD

AND

SAMUEL J LEVIN, MD

DETROIT

Edema is one of the most serious symptoms of nephrosis and of some types of nephritis, cardiac failure and some forms of undernutrition also may be accompanied by edema

The prominent symptoms of nephrosis are edema of the entire body, often pleural and peritoneal effusions, marked albuminuria, normal nonprotein nitrogen, oliguria, a low concentration or a reduction in the blood protein and the absence of hypertension and renal insufficiency. Other types of nephritis that occur with edema, also nephrosis, will usually, if not arrested, follow a chronic course and develop cardiac enlargement, hypertension, an increase in the nonprotein nitrogen of the blood and chronic kidney changes

In children, these diseases are often accompanied by infection beginning in the upper respiratory tract, which often leads to death from septicemia, pneumonia, erysipelas, peritonitis or a combination of these diseases. Death practically always ensues in the edematous stage of the disease as the body's oxidative processes and immunologic properties are defective during the edematous stage. Baehr¹ states that in children with nephrosis the disease is usually superimposed on a chronic pneumococcus infection in the upper respiratory tract and that eventually most of these children die of a pneumococcus infection of ascites, that is, in the edematous stage of the disease

Many methods have been suggested for the relief of edema from the tissues. The edema is often not complete in all the tissues and returns at the onset of any infection or from an exacerbation of a previous infection or from prolonged loss of albumin through the kidney

The substances and methods commonly used in an effort to get rid of excess fluid in the tissues are the purine substances caffeine, theobromine, theophylline and their derivatives, the mercury compounds mild mercurous chloride, merbaphen and mersalyl, the salts calcium chloride, ammonium chloride, magnesium sulphate and ammonium sulphate, urea, parathyroid extract, thyroid therapy and a high protein diet, concentrated dextrose solution given intravenously, forcing fluids, starvation or any combination of these methods, also, paracentesis of cavities, especially the peritoneum, sometimes is followed by a relief of a generalized edema. Following or during the course of an acute infection such as measles or during a septicemia in children with nephrosis, edema has suddenly disappeared

Calcium gluconate can be given intravenously, intramuscularly and subcutaneously. It is a preparation of calcium with gluconic acid and is a product of pure calcium gluconate containing 93 per cent calcium. It is prepared in ampules containing 15½ grains (1 Gm) of calcium gluconate in about 10 cc of water. It is our purpose to call attention to the effect of the administration of calcium gluconate on edema in chil-

dren. In this report we shall give only the details of the cases that are important

REPORT OF CASES

CASE 1—Earl S, aged 4 years entered the hospital May 29, 1930 with a chief complaint of generalized swelling of the body. He had had measles at 1 year whooping cough at 2 years and pneumonia and otitis media at 3 years. The present illness began one week before admission to the hospital with a 'cold' and without a fever. There was some nasal discharge at this time and a slight cough. The 'cold' was accompanied by a swelling of the eyelids, face and ankles which became progressively worse each day until the entire body was swollen, in which condition he appeared at the time of entrance to the hospital. The child's appetite was good up until the time of this sickness. Nothing else of importance appeared in the history.

On admission to the hospital the patient weighed 30 pounds (13.6 Kg). He appeared well nourished, was not acutely ill and was pale with puffiness of the face and eyes, there was distention of the abdomen, edema of the lower extremities and no edema of the upper extremities, slight edema of the chest wall and moderate edema of the scrotum. The head was normal except for edema of the eyelids, the eyes were practically shut from the edema. The pupils and eye muscles were normal. The ear drums were normal and from the nose there was a profuse mucopurulent discharge. The mouth and teeth were in good condition. The pharynx was very red showing swollen inflamed tonsils filling the throat. The lungs were clear throughout. There was some cardiac enlargement but no murmurs, thrills or arrhythmia. The abdomen was distended 4 or 5 inches above the level of the chest. A fluid wave was present and there was fluid in the flanks. The liver and spleen were not palpable.

The specific gravity of the urine was 1.025. It was acid. Albumin was 4 plus, there were a few granular casts, no red blood cells or leukocytes and no sugar.

Examination of the blood showed the red blood cells to be 4,650,000, white blood cells 9,100, hemoglobin 70 per cent, polymorphonuclears 67 per cent, large and small lymphocytes 33 per cent, nonprotein nitrogen 26.5 per cent per hundred cubic centimeters, cholesterol 248 mg, calcium 4.5 mg, phosphorus 2.1 mg. The serum protein estimation of the blood was not done. The Wassermann test of the blood was negative. The tuberculin test was negative.

Röntgen examination of the chest and sinuses revealed a limited development of all the paranasal sinuses and a slight indistinctness in outline of both intrums. The films of the chest showed some cardiac enlargement. The root gland deposit was distinctly in excess of normal and had the appearance of being secondary to a respiratory infection. There was no evidence of parenchymal disease in either the right or left lung field.

A provisional diagnosis was made of beginning nephrosis and chronically infected tonsils. The child was placed on a mixed diet containing 50 Gm of protein. The child remained in bed and the rectal temperature ranged from 99.6 to 100.6 F. June 10 twelve days after admission to the hospital 10 cc of calcium gluconate was given intramuscularly. The weight at this time was 30 pounds 6 ounces (13.8 Kg). Three days following, June 13 the weight was 29 pounds (13.2 Kg) and on July 6 26 pounds 2 ounces (11.8 Kg). No other treatment was given at this time and no more calcium gluconate was given.

A tonsillectomy was done at this time and there was no return of the fluid following the procedure. The edema was cleared from the extremities, face and chest wall. The fluid was cleared from the abdomen and the abdomen was decreased in size. The child was eating well. Albumin was present in the urine but there were no casts, red blood cells or leukocytes. The blood calcium was 9.4 mg per hundred cubic centimeters, the phosphorus 4.2 m% and the cholesterol 280 mg.

CASE 2—Harriet F, aged 17 months entered the hospital June 25 1930 with a chief complaint of marked swelling of the extremities, upper and lower. She had had no previous

From the Metabolism Clinic, Children's Hospital of Michigan.
1. Baehr, George, quoted by Christman, H. A. 'Nephrosis is a Critique'.
J. A. M. A. 93: 23-25 (July 6) 1929.

acute illness. Seven days before admission she had had a "cold" with a nasal discharge accompanied by a swelling of the neck. The mother stated that at this time she had first noticed the marked swelling of the face followed by the swelling of the upper and lower extremities and the protrusion of the abdomen. The child had been fed milk, cereals, vegetables and fruit and was thought to have been normal up to the time of admission to the hospital.

On admission the patient weighed 17 pounds 8 ounces (8 Kg). She appeared poorly nourished, pale and acutely ill, with puffiness of the face and eyes and swollen, edematous

extremities. The head was normal except for the edema of the face. The eyes showed nothing abnormal. The ear drums were normal. There was a cervical adenitis, the size of half a lemon, on the left side of the neck, and the right side showed a pea sized adenitis. There was a small amount of mucopurulent discharge from the nose. There were twelve teeth present. The mucous membranes were able but otherwise normal.

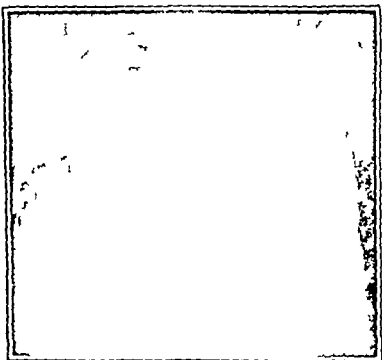


Fig. 1 (case 3)—Extensive pleural effusion at the time of the generalized edema. Aug. 15 1930

There were moderately enlarged tonsils with chronic infection. There was a dullness over the heart extending to the left axillary line, and on the right side the dullness extended 7 cm beyond the right sternal margin. There was a soft blowing murmur at the apex that transmitted to the axilla, there were no thrills or arrhythmia. The abdomen was distended from 3 to 4 inches above the level of the chest. A fluid wave was not demonstrable. The liver was felt three fingerbreadths below the costal margin. The spleen was not palpable.

The specific gravity of the urine was 1020, it was acid, albumin was 1 plus, there was an occasional leukocyte, no casts or red blood cells and no sugar were present.

Examination of the blood showed the red blood cells to be 3,896,000, white blood cells, 15,000, hemoglobin, 60 per cent, polymorphonuclears, 76 per cent, large and small lymphocytes, 24 per cent, nonprotein nitrogen, 41 mg per hundred cubic centimeters of blood, cholesterol, 178 mg. Other blood estimations were not made. The Wassermann and Kahn reactions of the blood were negative. The tuberculin test was negative.

Roentgen examination of the chest and sinuses revealed a limited development of the sinuses but no clouding. Films of the chest showed a cardiac shadow extending to the left lateral chest wall at the level of the fifth and sixth rib anteriorly. There was an extensive root deposit around the course of the bronchi. The lung parenchyma was clear.

The child was placed on the regulation house diet for her age. She was given 10 cc of calcium gluconate intramuscularly, June 30, and on July 22, twenty-seven days after admission, the weight was 13 pounds 3 ounces (6 Kg) a loss of 4 pounds 5 ounces (2 Kg) since admission. The weight had reached this point, July 12, and remained at this level. A blood transfusion was given at this time and the weight remained stationary. The patient was given small doses of digitalis by mouth and was discharged from the hospital at this time. The urine had increased to a 4 plus albumin content at the time of discharge, and the patient's blood count was red blood cells, 5,400,000, and hemoglobin, 90 per cent, showing an improvement in the anemia.

A provisional diagnosis was made of beginning nephrosis, cardiac enlargement and secondary anemia.

CASE 3—Sophie W. aged 10 years entered the hospital, Aug. 9 1930 with a chief complaint of swelling of the feet, abdomen and eyelids and of pain on urination. She became

sick one month before, at which time she felt listless and weak. There was swelling at this time, she was seen by a physician, who said she had kidney trouble and advised her to go to a hospital. An accurate history could not be obtained on account of language difficulty.

On admission the patient weighed 81 pounds 4 ounces (36.8 Kg). She appeared very edematous, with markedly swollen feet and legs and marked enlargement of the abdomen. The eyelids were red and puffy. The patient also had edema of the upper extremities. The skin pitted readily on pressure over the entire body. The glands were normal in size. The head was normal except for the edema. The eyes were normal. The ear drums appeared normal. There was no discharge from the nose. The teeth were in good condition. The mucous membranes were pale. The tonsils were large and septic. There was a marked swelling of the soft tissues of the neck. The chest was asymmetrical, the left chest was practically immobile. The fremitus was decreased over the entire left chest and was flat to percussion throughout. The breath sounds were absent as was the spoken voice. On the right chest, percussion anteriorly was hyperresonant and the breath sounds were heard throughout. The left border of the chest could not be percussed because of the dullness of the entire left chest. The heart sounds were of good quality. There were no murmurs, thrills or arrhythmia. The abdomen was swollen and tense. There was a shifting dullness present. The extremities showed a marked edema.

The specific gravity of the urine was 1030, it was acid, albumin was 4 plus, a few red blood cells and an occasional hyaline cast were found, there were no leukocytes and no sugar.

Examination of the blood showed the red blood cells to be 3,850,000, white blood cells, 20,000, polymorphonuclears, 80 per cent, large and small lymphocytes, 20 per cent, the non protein nitrogen, 22 mg per hundred cubic centimeters of blood, calcium, 10 mg, phosphorus, 4 mg, and cholesterol 248 mg, other blood estimations were not done. The blood Wassermann reaction was negative.

Roentgen examination of the chest showed a mass of pleural exudate on the left side of the chest, with a resulting displacement of the heart and the mediastinal contents toward the right. The cardiac shadow was partially obscured. There was no evidence in the right thorax and no frank parenchymal disease. The films of the sinuses showed slight cloudiness, but there was no evidence of an exudate in the sinuses.

The child was placed on a regulation house diet for her age and, over a period from August 15 to September 8, was given 155 cc of calcium gluconate intramuscularly and subcutaneously. September 20, she showed a weight loss of 29 pounds 12 ounces (13.5 Kg). There was entire absorption of the pleural exudate and the ascites and abdominal enlargement had entirely disappeared.

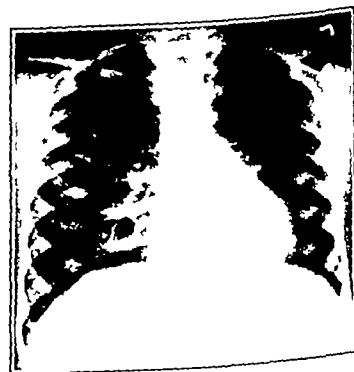


Fig. 2 (case 3)—Entire absorption of the pleural effusion after calcium gluconate therapy. No other treatment was used. Roentgenogram was taken Sept. 8 1930.

The patient's general condition was good and she had a much stimulated appetite. The urine examination at this time showed a specific gravity of 1025, acidity, albumin 1 plus, no sugar, red blood cells or leukocytes were found and only an occasional granular cast. The blood cholesterol was 263 mg per hundred cubic centimeters, the nonprotein nitrogen 32 mg, calcium, 9.9 mg, and phosphorus, 3.3 mg per hundred cubic centimeters.

A provisional diagnosis was made of beginning nephrosis, pleural effusion, ascites and generalized edema.

The roentgen examination of the chest, September 19, showed that there had been a complete absorption of the fluid in the thorax. The root markings were prominent and the heart shadow was normal in size.

COMMENT

The administration of the calcium gluconate was not accompanied by any undesirable symptoms. There was no nausea nor vomiting. The calcium gluconate did not seem to have any harmful effects on the edematous tissues into which it was given. If the calcium gluconate is given in small doses, 10 cc over different areas subcutaneously, the effect is less painful. Any amount of fluid given intramuscularly, sufficient to cause pressure in the muscle tissue, may cause pain and swelling of the tissue. There was complete disappearance of the hydrothorax, as evidenced by repeated roentgen examinations and clinical signs. The ascites disappeared and there was a decrease in the size of the abdomen. There was no unfavorable change in the urinary condition during or following the administration of the calcium gluconate that would lead us to believe that the calcium gluconate had any harmful effect on the kidneys. The calcium salt dehydrates the kidneys, which also may be edematous.

Results of Treatment

Case	Date	Weight	Treatment	Weight Loss
1	6/10/30	30 lbs 6 oz	10 cc calcium gluconate	
	6/13/30	29 lbs		1 lb 6 oz
	7/ 6/30	26 lbs 2 oz		4 lbs 4 oz
2	6/30/30	17 lbs 8 oz	10 cc calcium gluconate	
	7/10/30	14 lbs		
	7/22/30	13 lbs 3 oz		4 lbs 5 oz
3	8/15/30	81 lbs 4 oz	10 cc Ca G	
	8/18/30		10 cc Ca G	
	8/20/30	79 lbs	20 cc Ca G	2 lbs 4 oz
	8/23/30	78 lbs 8 oz	20 cc Ca G	2 lbs 12 oz
	8/24/30	77 lbs	20 cc Ca G	4 lbs 4 oz
	8/28/30	75 lbs 4 oz	30 cc Ca G	6 lbs 4 oz
	8/30/30	68 lbs 4 oz	15 cc Ca G	13 lbs
	9/ 3/30	65 lbs	20 cc Ca G	13 lbs 4 oz
	9/ 8/30	63 lbs	10 cc Ca G	18 lbs 4 oz
	9/13/30	57 lbs 4 oz		24 lbs
	9/20/30	51 lbs 8 oz		29 lbs 12 oz

A general improvement in the appetite and general condition of the children was noticeable after they were free from edema, also, the dehydration of the mucous membranes of the respiratory tract seemed to have a good effect on the patient's resistance to the respiratory infections which were the onset of the usually fatal infections that complicate nephrosis in children in the edematous stages of the disease. In cases 1 and 3 there was a drop in the cholesterol of the blood after the edema disappeared. In case 1 there was a marked change in the calcium of the blood from 4.5 to 9.3 mg per hundred cubic centimeters of blood following treatment. The calcium has remained at a normal level since this time.

The weight loss in the three cases was, respectively 4 pounds 4 ounces (2 Kg) 4 pounds 5 ounces (2 Kg) and 29 pounds 12 ounces (13.5 Kg) which depended on the size of the child and the stage of edema to which it was allowed to progress. There was no evidence of an alkalosis, such as depressed or irregular respirations, cyanosis, tetany or convulsions. As the calcium gluconate is slightly basic we thought that the calcium gluconate may possibly affect the sodium bicarbonate level of the blood. That no symptoms occurred is

important. To patient 3 we gave 155 cc (240.55 grams) of calcium gluconate intramuscularly and subcutaneously in the buttocks and under the scapulae, over a period of twenty-one days, and the weight loss of edema followed to its lowest level—a 29 pound loss in thirty-six days. At this rate it took about 5.3 cc, or 7½ grams per pound of water, in reducing the patient. We believe that the amount of edema could be calculated from the patient's weight and height, and then the amount of calcium gluconate necessary could be given in one or two doses to reduce the edema quickly. This might become necessary in the face of an impending serious infection. We have not had enough cases at present to prove how soon we could free the patient of the edema without any harmful effects, also to check up the dosage accurately.

Nephrosis has often been referred to as protein diabetes by Epstein,² Kollert,³ Lowenthal⁴ and others on account of the loss of albumin through the kidneys and on account of the low blood protein. In the days before insulin children with diabetes developed acidosis, and with the accompanying infections, which started mildly and progressed seriously the outcome was soon fatal. Anything that can keep the patient from developing edema or that can relieve the edema quickly is good therapy. We should be able to prevent the return of the edema at its onset, at the beginning of an acute infection, with the use of calcium gluconate in small doses and keep the edema from developing to a serious degree until the blood protein is replaced by sufficient protein feeding, continued over a sufficient length of time. We have been able to accomplish this at the onset of a slight respiratory infection in two of the cases that returned with beginning edema of the face last fall.

Munk,⁵ Volhard,⁶ Fahr,⁷ Epstein,² and others have emphasized the importance of the protein loss in these cases and the need of giving sufficient protein in the diet to minimize the protein loss by the kidney as well as from the blood, and the importance of not giving too much protein so that kidney damage will be accentuated. It is necessary to keep these patients on a sufficient, measured amount of protein to promote further good treatment in order to restore the lost blood protein and to keep the kidneys from secreting too much albumin. Cowie, Jarvis, Cooperstock and Nakao⁸ have shown in a study of nephrosis in a child that from 1 to 3.75 Gm of protein per pound of body weight is sufficient to restore the blood protein level and to decrease the protein loss from the kidneys.

The use of calcium gluconate and the optimal protein diet should prove useful in the successful treatment of children with nephrosis. Up to the present the mortality of children with nephrosis accompanied by infections has been 50 per cent or higher.

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ENORMOUS INCREASE OF HEART VOLUME WITH MITRAL STENOSIS

REPORT OF A CASE

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The association of auricular dilatation with mitral stenosis was well appreciated by clinicians a century ago.¹ It has long been recognized that in the presence of definite obstruction to the free flow of blood through the mitral orifice the first of the cardiac chambers to be noticeably affected by the altered relations of intra-cardiac pressure is the left auricle, which increases in size, largely the result of dilatation. This enlargement is often accompanied by an actual hypertrophy of the muscle fibers and an increase in the thickness of the auricular wall. Later the right ventricle and right auricle may be affected in a similar manner. More recently, the profound effect that mitral regurgitation alone, in the absence of stenosis, may at times exert in a similar direction has attracted considerable attention and is well shown in the unusual case recorded by Adam² of a traumatic perforation of the anterior cusp of the mitral valve resulting from a revolver shot wound. Pure mitral regurgitation developed and at postmortem examination six years later all four chambers of the heart were found to be greatly hypertrophied and dilated. Although adhesive pericarditis followed the removal of blood from the pericardium at the time of the injury, the adhesions were not massive and it seems likely that the mitral regurgitation in this instance was the factor primarily responsible for the extensive cardiac changes. Bach and Keith,³ in a recent report, called attention to a case of extreme dilatation of the left auricle as a complication of rheumatic mitral regurgitation, with fused cusps but no stenosis, the orifice admitting three fingers easily. We have recently reviewed at the Massachusetts General Hospital the postmortem observations of twenty-six cases presenting an unusual amount of left auricular dilatation. Changes in the mitral valve, the result of a previous rheumatic infection, were present in every case. In 62 per cent of the cases the circumference of the mitral valve measured 7.5 cm. or less, that is, anatomic mitral stenosis was present, while in 38 per cent of the cases the mitral orifice exceeded 7.5 cm. in circumference and mitral regurgitation was the predominant feature. Auricular fibrillation is a well recognized additional factor predisposing to passive dilatation of the auricles and has usually been found present in those cases in which the enlargement is extreme, it was present in eighteen (69 per cent) of our series of twenty-six cases of auricular enlargement at the Massachusetts General Hospital.

The extraordinary extent to which the auricles may dilate while the heart continues to function with a fair degree of efficiency is of considerable interest both clin-

ically and pathologically. The position of the auricles and their close proximity to important adjacent structures in the mediastinum is such that even moderate enlargement may be responsible for profound functional alterations in other organs the result of pressure on nerves, blood vessels or bronchi. At other times extreme dilatation, as in the case we are reporting, may be accompanied by relatively insignificant disturbances either in the heart or elsewhere in the body. King⁴ in 1838, was the first to call attention to the possibility of a partial collapse of the left main bronchus by an enlarged left auricle. More recently Stoerk⁵ has made a comprehensive study of the anatomic relations of the mediastinal contents and has pointed out the close relation of the left main bronchus and the upper surface of the left auricle, while the roentgenologic demonstration of left auricular enlargement has been recently studied by Steele and others.⁶

We are reporting herewith our observations on a patient with enormous increase of heart volume asso-

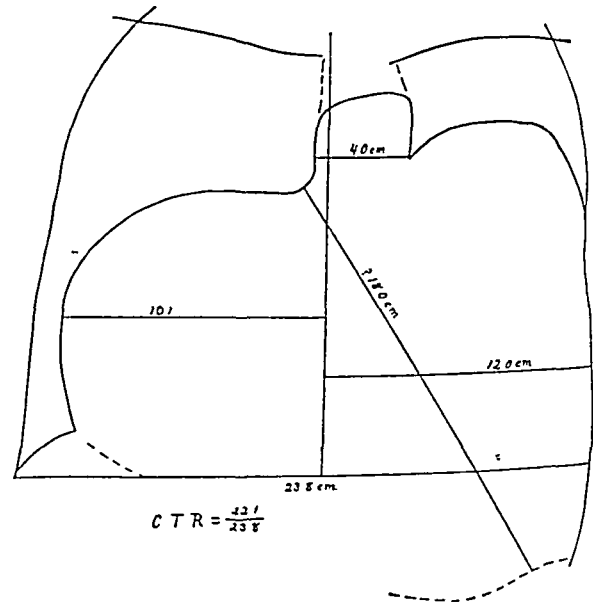


Fig 1—Orthodiagram taken four months before death showing the enormous size of the cardiac shadow

ciated with disease of the mitral valve giving rise to both stenosis and regurgitation, this case presented several features of considerable interest

REPORT OF CASE

M. D., a man, aged 28 an Italian, had been under our observation for nineteen years. He was seen by one of us (G. M. B.) for the first time in March 1911, at the age of 9 years with an attack of acute rheumatic fever. There was evidence of cardiac disease at this time, and a loud blowing systolic murmur was audible over the precordium best heard at the apex. He spent eleven weeks in bed with this attack.

In 1912, a year later, he was again seen because of dyspnea on exertion. Well marked mitral stenosis and regurgitation were present. He felt considerably better after two weeks of rest in bed. In 1915 there was a second attack of acute rheumatic fever and the following year (1916) he entered the Massachusetts General Hospital for tonsillectomy. His heart was found to be moderately enlarged with a rather rapid

1 Laennec R. T. H. A Treatise on the Diseases of the Chest translated from the French by John Forbes Philadelphia James Webster 1821

2 Adam A. Ueber die traumatischen Veränderungen gesunder Klappen des Herzens Ztschr. f. Kreislaufforsch. 10 313 (May 1) 1927

3 Bach Francis and Keith T. S. Enlargement of the Left Auricle of the Heart Lancet 2 766 (Oct. 12) 1929

4 King J. W. On a Morbid Flattening or Compression of the Left Bronchus Produced by a Dilatation of the Left Auricle Guy's Hosp. Rep. 3 175 1838

5 Stoerk O. Zur Topographie des Mediastinum bei normaler und bei pathologischer Herzform Ztschr. f. klin. Med. 69 32 1910

6 Steele J. M. Jr. Compression and Displacement of the Bronchi in Mitral Stenosis Am. Heart J. 4 53 (Oct.) 1928 Steele J. M. Jr. and Paterson R. Distortion of the Bronchi by Left Auricular Enlargement Am. Heart J. 4 692 (Aug.) 1929

rate and normal rhythm. The sounds were of fair quality, with a snapping first sound at the apex and a marked accentuation of the pulmonary second sound. The characteristic murmurs of mitral stenosis and regurgitation were present. The tonsils were removed and he was discharged two days later.

In 1917 he visited the outpatient department for a follow-up examination, having been in good health since his hospital entry and essentially without symptoms except for moderate dyspnea on exertion. At this time his pulse was noted to be slightly irregular (auricular fibrillation?) at a rate of 108 per minute. Roentgen examination showed the heart to be enlarged, of a "mitral" shape with extreme enlargement of the auricles, especially of the left, the total transverse diameter of the heart being 13 cm, and the transverse diameter at the base measuring 11.5 cm. In 1920 there occurred an attack of slight congestive failure accompanied by dyspnea, cyanosis, weakness and palpitation. Auricular fibrillation was noted definitely at this time. Digitalis therapy was started, resulting in considerable improvement in the patient's condition and he was able to lead a fairly active life, though at times it was necessary for him to spend one or two months in bed because of weakness and dyspnea on exertion.

In January, 1928, at the age of 26 years, he entered the hospital for a second time because of frequent headaches associated with a feeling of extreme exhaustion at the end of the day, increasing dyspnea on slight exertion, and a progressive loss of weight during the preceding three months. In spite of these symptoms, however, he had continued at work, taking digitalis intermittently and inadequately.

The patient was well developed and well nourished. On examination he lay flat in bed in no distress. Cyanosis was

scapular region to the base. Over the apex of the left lung there was an increase in the intensity of the breath sounds. The heart was markedly enlarged to the right and to the left, with a diffuse heaving impulse visible over the entire precordium but of maximum intensity in the sixth intercostal space in the anterior axillary line 10 cm to the left of the midsternal line. The left border of dullness at this point was 11 cm, being 2.5 cm outside the midclavicular line. The right border of



Fig 3—Front view of the heart in the present case with similar view of a heart of normal size (weight about 325 Gm). Note the enlargement of the right auricle and ventricle and the enormous increase in size of the left auricle. A small amount of lung tissue is shown adherent to the top of the left auricle. Cannulas and tubes are shown in the superior vena cava and one of the pulmonary veins introducing fluid to keep the heart filled. The pencil at the apex of the heart points to the interventricular sulcus.



Fig 2—Appearance of heart within the pericardium occupying almost the entire width of the thorax. Only the upper lobes of the lungs are visible. Below the diaphragm is to be seen the enlarged congested liver. We are indebted to Mr. Philip A. Nutting for the photographs in this case.

not present but there was a slight icteric tinge to the sclerae. The superficial veins of the arms and thorax were somewhat dilated and there was well marked pulsation of the jugular veins in the neck. The chest was clear but posteriorly there was evidence of abnormality at the base of the left lung with dullness on percussion, distant breath sounds, diminished tactile fremitus and whispered voice extending from the mid-

dullness in the fifth interspace measured 8 cm from the midsternal line. At the apex, well marked systolic and diastolic thrills were palpable. The rhythm was absolutely irregular and the rate was from 60 to 65 per minute. The sounds at the apex were almost obscured by loud blowing systolic and rumbling middiastolic murmurs. Over the aortic area and along the left sternal border there were less intense blowing systolic and early moderately high pitched diastolic murmurs. No first or second sound could be heard in the tricuspid area. The radial pulse was of small volume. The blood pressure was 120 mm of mercury systolic and 80 mm diastolic. The abdomen was somewhat tender and resistant in the epigastrium and right upper quadrant with a moderate increase in liver dullness but the edge could not be felt. There was a well marked systolic pulsation in this region. Clubbing of the fingers and edema of the extremities were not present, and the remainder of the examination was normal.

The laboratory data were essentially normal. Repeated urine examinations showed no abnormalities. The phenolsulphonphthalein test of renal function showed a 50 per cent excretion of the dye in two hours. Examination of the blood revealed a red cell count of 5,800,000 on two occasions and a hemoglobin determination of 80 per cent; the smeared specimen showed nothing remarkable. A culture of the blood showed no growth. The Wassermann reaction on the blood serum was negative; the icteric index was 12 and the nonprotein nitrogen 35 mg per hundred cubic centimeters of blood. An electrocardiogram showed auricular fibrillation with a ventricular rate of from 50 to 60 and low T waves without abnormal axis deviation.

Roentgen examination of the chest revealed marked dullness obliterating the outline of the border of the heart and diaphragm on the left side with the upper border somewhat curved sharply defined and opposite the third rib anteriorly. The heart shadow extended to the right farther than normal. The shape was not that usually seen with free pericardial fluid but was thought to be due to tremendous enlargement of the heart or to encapsulated fluid.

The patient remained in the hospital for two weeks during which time there was considerable symptomatic improvement and at the end of this time he was discharged home with the

diagnosis of chronic rheumatic heart disease, mitral stenosis and regurgitation, probable aortic and tricuspid insufficiency, possible adhesive pericarditis and auricular fibrillation. After discharge from the hospital he continued with a daily maintenance dose of digitalis and except for two transient attacks of severe "prostration" and collapse he was able to lead a relatively active life frequently driving an automobile 40 miles a day. Easy fatigability and dyspnea on exertion were his only symptoms. Roentgen and orthodiagraphic examination of the chest in February, 1930, showed a tremendous heart, but

foramen ovale was closed, and the coronary sinus was normal and protected by a valve. The auricular appendages except for their unusual size, were not remarkable and there was no evidence of an antemortem clot. The coronary arteries were patent. The wall of the left ventricle measured 13 mm. in thickness, the right ventricle 4 mm., the right auricle from 15 to 15 mm., and the left auricle 1 mm.

The pleural cavities contained no free fluid but were markedly diminished in size by the encroachment of the enlarged heart. Considerable anteroposterior flattening of the trachea from pressure of the distended left auricle was present, and the angle formed by the primary bronchi was markedly widened. Considerable anteroposterior flattening of the left main bronchus was present also (fig 5). The lungs were greatly diminished in size by compression of the enlarged heart being estimated at one-third to one-half that of their expected size. The left lower lobe was completely collapsed, while the remaining lobes showed compression and congestion of moderate degree.

The liver was much enlarged, weighed 1,600 Gm., and was displaced downward. The normal lobulation was replaced by small irregular masses of slightly bulging, yellowish brown tissue. There was slight congestion of the kidneys, otherwise the remaining organs were essentially normal. An examination of the brain was not permitted.

Microscopic examination showed the muscle fibers of both ventricles of the heart to be markedly elongated and narrowed. The auricular walls were extremely thin and consisted almost solely of connective tissue with very rare muscle fibers. There was no evidence of myocarditis. Section of the lung showed congestion with the alveoli partially filled with a delicate exudate composed of albuminous detritus, a few red blood cells and mononuclear cells. There were present also collections of hemosiderin filled alveolar phagocytes (heart failure cells). The liver showed a moderate amount of congestion, the hepatic cells being decreased in number and replaced by areas of congestion, necrosis and fibrosis. There were several large areas of fibrosis scattered throughout the organ, chiefly in the periportal regions. The kidneys showed considerable postmortem degeneration, so that the finer histologic changes of the glomeruli and tubules could not be made out with certainty. Scattered sclerosed glomeruli, patches of



Fig 4—Left lateral (A) and right lateral (B) views of the heart in the present case. Note the muscle bands in the right auricular wall and the posterior protrusion of the enormous left auricle.

essentially the same in appearance as two years previously (fig 1). In June, 1930, the patient went swimming, drove home and shortly afterward, while dressing, suddenly fell forward and died immediately.

Postmortem examination, performed seventeen hours after death, showed no abnormality of the surface of the body. When the thorax was opened the heart was found to occupy almost the entire expanse of the thoracic cage, only a small part of the upper and lateral portions of each pleural cavity being occupied by the lung (fig 2). The left margin of the heart was in contact with the left thoracic wall, the right margin extended to within 1 cm. of the right thoracic wall, so that the heart occupied almost the entire transverse diameter of the thorax. The transverse diameter of the heart in situ was 215 cm., which corresponded closely to the transverse diameter of the shadow in the orthodiagram made four months before death, the internal diameter of the thorax, post mortem, was 225 cm. The pericardium was slightly thickened and adherent to the surface of the left auricle over an irregular area of moderate size on the lateral and anterior surface of the latter. Otherwise it showed a normally close investment of the heart with glistening surfaces. The heart, after being removed from the thorax and filled with fixing solution (Klotz 1) with the main vessels ligated, displaced the enormous volume of 4,600 cc. of water (figs 3 and 4, the displacement of the normal heart is from 700 to 800 cc.). After removal of the pericardium and all attached structures (except a small section of the trachea and primary bronchi) together with all clot from the interior, the heart weighed 850 Gm. The capacity of the left auricle was great, amounting to 1,760 cc. The right auricle was considerably dilated also and held 660 cc., the right ventricle held 320 cc., and the left ventricle 70 cc. When the heart was opened, the mitral valve was found to be diseased, 'fish mouth' in character with considerable thickening of the valve leaflets but with a circumference of the irregular orifice of 85 cm. (dimensions of the opening measuring 15 by 3 cm.). The aortic valve showed evidence of slight thickening and stenosis the orifice measuring 55 cm. in circumference. Considerable dilatation of the tricuspid ring was present but no definite evidence of valvular disease the circumference was 145 cm. The pulmonic valve was not remarkable and showed no evidence of structural change (circumference 8 cm.). The

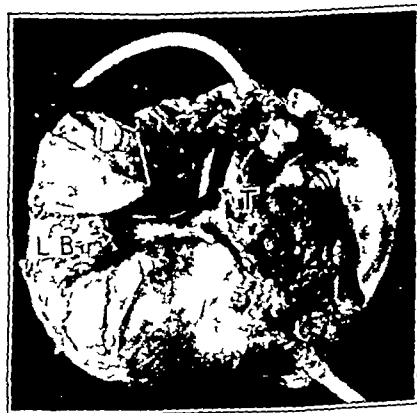


Fig 5—View of the heart from above and behind showing the bifurcation of the trachea (T) with the left bronchus (L.B.) displaced upward and flattened by pressure from an enormous left auricle.

lymphocytic infiltration, tubular atrophy, and fibrosis suggested healing and healed infarcts. The results of the examination of the spleen, pancreas, suprarenal glands and aorta were essentially negative. The anatomic diagnosis was chronic rheumatic heart disease, well marked chronic mitral endocarditis, slight chronic aortic endocarditis, dilatation of the tricuspid valve, hypertrophy and extreme dilatation of the heart, chronic passive congestion, cardiac cirrhosis of the liver, and healed infarcts of the kidney. The cause of sudden death was not determined.

COMMENT

The extraordinary displacement of the heart (4 600 cc) is the outstanding feature of this case. The literature which is notably deficient in reports of heart volume (displacement), contains no record that we have found of an actual measurement equalling that in the present case. The volume of the muscle mass of normal hearts has been comprehensively studied by Beneke⁷ in a large series of cases of both males and females of all ages up to 80 years. The volume of the normal

Dimensions of the Filled Heart After Removal from the Thorax

	Cm
Greatest circumference of the auricles	65.5
Widest diameter across the auricles	24.0
Greatest anteroposterior diameter (left auricle)	17.0
Circumference of left auricle	46.0
Vertical diameter of left auricle	12.5
Circumference of right auricle	44.0
Anteroposterior diameter of right auricle	15.5
Vertical diameter of right auricle	14.0
Greatest width of ventricles	16.5
Greatest depth of ventricles	8.0
Base of aorta to apex	18.0
Superior vena cava to apex	17.0
Circumference of aorta	7.0
Circumference of pulmonary artery above valve	6.5
Circumference of inferior vena cava	10.5

adult male heart muscle was found to vary from 260 to 290 cc, approaching the latter figure with advancing years. The muscle volume of women's hearts averaged slightly less than that of the men in the same decade of life. Hochrein⁸ has determined the capacity of the various cardiac chambers in thirty normal hearts, and the total capacity of the four chambers averaged 561 cc. On the basis of these investigations it appears that the normal displacement of the filled heart should be approximately 800 cc, varying somewhat according to the age and the sex of the patient. It is of interest that a normal heart weighing 325 Gm which we recently filled with fluid after the main vessels were ligated actually displaced 700 cc of water, a figure that is in a relatively close proximity to the expected volume (displacement) estimated by combining the average values for capacity and volume given by Hochrein and Beneke. In the case of the greatly enlarged heart here recorded, cardiac hypertrophy was far less a factor than dilatation in causing the extreme enlargement, the weight was 850 Gm, which, although considerable, has often been exceeded, Smith⁹ has recorded a heart that weighed as much as 1 755 Gm.

The capacity of the auricles was remarkable also. The left auricular capacity (1,760 cc) has been exceeded by only three cases previously recorded, namely that of Minkowski¹⁰ in which the left auricle held 3 liters, Muller's¹¹ case with a left auricular capacity of 2.5 liters, and Goedel's¹² with a left auricular capacity of 2 liters. The right auricular capacity of 650 cc appears to be a record one, we have found none larger reported.

It is of considerable interest that in spite of the unusual size of the heart in our patient he was able to lead a relatively active life up to the time of his sudden death, the cause of which is obscure. Although

the brain was not examined, it seems unlikely that a cerebral embolus was responsible for his sudden exit, a more likely explanation being some unusual disturbance of cardiac mechanism, such as ventricular fibrillation or standstill.

SUMMARY

1 A young man with mitral disease, under observation for nineteen years, lived a relatively active life up to the time of his sudden death, in spite of an extraordinary amount of cardiac enlargement and an extreme degree of auricular dilatation.

2 The volume (displacement) of the filled heart was 4,600 cc, which is from six to seven times that of a normal sized heart and establishes a record for future comparison. The literature is notably deficient in measurements of heart volume (displacement), a determination that should be a helpful indication of the degree of responsibility of cardiac dilatation in the production of cardiac enlargement. In the case recorded cardiac hypertrophy was far less a factor than dilatation in causing the extreme enlargement; the weight was 850 Gm, which has often been exceeded.

3 The left auricle had a capacity of 1,760 cc, a measurement exceeded by only three other cases in the literature. The right auricle held 650 cc, which appears to be a record capacity.

VESICO-INTESTINAL FISTULAS *

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In a communication¹ read before the Section on Urology of the American Medical Association in 1927, the possible extension of inflammatory processes in viscera adjacent to the superior pelvoretal space was clearly emphasized. Instances were cited in which infection originating in the seminal vesicles, superior urethra and other structures had spread to this space and, forming inflammatory deposits, had subsequently involved other juxtaposed organs. It was in this communication that pertinent data relative to the etiology of vesico-intestinal fistula were brought to light.

The literature on the subject records a proportionately limited number of cases. Prior to 1870, when Blanquinque's² article appeared there are a few isolated references in mainly of French source, by Boyer,³ DeSault³ and Chopart.³ In the seventeenth century Schenckius,³ a German practitioner of Freiburg, noted the occurrence of a vesico-intestinal fistula in a fellow practitioner consequent on degenerative changes in a neoplasm of the sigmoid. In the same century, the Italians Cardano and Benvenuti⁴ independently reported similar cases. While the ancients did not fall short of noting at least one instance since the second century, the Ephesian physician Rufus⁴ quoted a certain Praxagoras as having seen a case of vesico-intestinal fistula—probably the famous Praxagoras of Cos the teacher of the greatest anatomist of the Ancients, Hierophilus.

The modern phase of this work began with the epochal contribution of Harrison Cripps⁵ on "The

⁷ Beneke, F. W. Ueber das Volumen des Herzens und die Weite der Arterien pulmonalis und Aorta aendens in den verschiedenen Lebensaltern. *Cassell Theodor Kay* 1879.

⁸ Hochrein, M. Untersuchungen am vollen Teil des Kreislaufes. *Arch f exper Path u Pharmacol* 12:4 345 1927.

⁹ Smith, Case of Monstrous Hypertrophy of the Heart. *New York J Med* 5 207 1850.

¹⁰ Minkowski, O. Demonstration eines Herzens mit ungewöhnliche tarker Dilatation der Vorhöfe. *München med Wchnchr* 51:152 1904.

¹¹ Muller, G. Ungewöhnliche Dilatation des Herzens und Au fall der Vorhof-funktion. *Ztschr f klin Med* 56 520 1900.

¹² Goedel, A. Eine ungewöhnliche Form der Herzvergrößerung bei Mitralstenose. *Wien klin Wchnchr* 42:427 (April 4) 1900.

* Read before the Section on Urology at the Eighty First Annual Session of the American Medical Association, Detroit, June 2, 1930.

¹ Morrissey, J. H. Seminal Vesicle and Prostatic Foci in Pelvic Perirectal and Ichiorectal Suppuration in Male. *J A M A* 90:446 (Feb 11) 1928.

² Blanquinque, *Fistules vesico-intestinales*. Paris thesis 1870.

³ Quoted by D. J. Orsini, *Encyclopaedia urologica* p 714.

⁴ Quoted by P. Cal (footnote 6).

⁵ Cripps, Harrison, *The Passage of Air and Faecal Matter with the Urine*. London 1868.

Passage of Air and Faecal Matter with the Urine" Written in 1885, many of the fundamental facts and views set forth therein still remain unchanged. He collected sixty-three cases and concluded that over 70 per cent of these were consequent on some inflammatory mischief, including ulceration. In fifteen instances absolute evidence was obtained that the fistulas were the result of an abscess bursting both into the bladder and into the bowel. Some of these appeared to have followed confinement, some stricture of the rectum. In a consideration of cancer of the rectum and its frequency, he concluded that, although there was considerable destruction of tissue, numerous fungoid granulations were produced which had a tendency to block contiguous cavities, and even in instances in which cancer had been the primary or contributory cause, the actual perforation of the bladder seemed to have resulted just as often from the bursting of the secondary abscess as from the direct extension of the growth itself.

In 1899 Pascal⁶ reviewed the subject matter comprehensively from all angles, quoting the work of Dumenil³ (1884), who proposed colostomy as a method of treatment, the work of Le Dentu⁷ (1884) and his transvesicular approach, which was repeated by Pousson in 1895, the views of Czerny⁸ (1887), who advocated a laparotomy, and the contributions of Tuffier³ and Dumont,³ who described appendicovesical fistulas.

Within recent years this entity has attracted the attention of a number of eminent American and English urologists and surgeons. Parham,⁷ in 1895, attempted to close a fistula by opening the bladder and by suturing the fistulous opening. He failed. In 1911 Chute⁹ reported two cases that came under his care, in both of which operation was attended with unsatisfactory results. In an analysis of the causes he felt that the fistulas arose from increased pressure in the bowel due to constipation and that fatty infiltration of the bowel wall was a predisposing factor in their development. Similarly, individual cases were reported by Keefe,¹⁰ McKenna,¹⁰ Rankin, Lauterman,¹¹ Judd and others. Lately this entire subject has been linked with diverticulitis and the literature pertaining to it has consisted primarily of case reports dealing particularly with the rupture of a sigmoidal diverticulum into the bladder. This view has received the sanction of Bryan.¹² He claimed that the most common site of the diverticula was in the neighborhood of the sigmoid flexure and since the distal end was more frequently the location, its adjacency to the bladder rendered rupture most likely. In the forty-two case reports that he collected, twenty-nine patients were males and thirteen females, the average age was between 50 and 60, he concluded that over 50 per cent were due to diverticulitis.

Of interest is Craig and Lee-Brown's¹³ analysis of the 195 cases reported by Pascal. These authors noted

a fistulous tract distributed as follows: 113 from bladder to rectum, 42 from bladder to colon, 26 from bladder to cecum, 6 from bladder to sigmoid, 7 from bladder to appendix. In 1915 Cunningham¹⁴ reported a total figure of 342 cases of vesico-intestinal fistula, basing the totality on 286 cases culled by Pascal up to 1900, 42 by Pristavescio¹⁵ from that date to 1912, and his own additional 8 up to the time of the publication of his articles.

Etiologically it must be said that these fistulas are secondary to some causative factor, and not infrequently the result of malignant growths, pelvic tuberculosis, syphilis and rarely actionary cases. These have been referred to as spontaneous fistulas by Oraison. A case of tuberculosis of the seminal vesicle has been reported in which an abscess perforated into both the rectum and the bladder. A much more common origin is an inflammatory focus, productive of rectal ulcerations, perirectal abscesses, diverticulitis and appendiceal abscesses. The French authors mention adnexal inflammatory masses in women as a potential cause, and likewise destructive diseases of the pelvic bony structure. These, of course, are exceedingly rare, although rupture of a tubo-ovarian inflammatory mass into either the rectum or the bladder independently have been reported by gynecologists. It must be borne in mind that oftentimes both the superior and the inferior pelvic rectal spaces may harbor a smoldering focus of infection—organisms originating in adjacent inflamed areas—which may under favorable circumstances flare up. Doubtless the increased incidence of inflammatory diverticulitis as a productive factor is due, in the main, to a better investigation of these cases, including roentgenographic study. This diagnostic adjuvant Cripps did not possess and consequently he failed to note diverticulitis in the fairly large number of cases he had occasion to investigate and report. Cripps does mention, however, two cases in which stone in the bladder was undoubtedly the cause of a vesico-intestinal fistulous development. Since the war, a number of fistulas have been reported the direct result of external violence, usually consequent on gunshot wounds, shrapnel fire, stab injuries and actual fracture of the pelvic bone with fragmentation. To this category there may be added surgical trauma, resulting from intestinal injury in debilitated subjects, extirpation of pelvic tumors, and the now discarded method of puncturing the bladder by way of the rectum.

The lesions resulting in fistulas are less often in the bladder and when located there are usually the result of a malignant growth, vesical tuberculosis or trauma. The location of the opening in the intestinal canal is most common in the rectum, nearly half of the collected cases being in this structure. The next most common location is the sigmoid and next in frequency are the small intestine and the cecum. The location of the opening in the bladder is most frequently situated in the region of the trigon, yet in many cases it has been observed in the posterior wall and a few have been observed on the summit of the bladder. Naturally a case in which the element of infection plays an important part will show a perforation in the region of the trigon, this portion of the bladder being the most fixed whereas the remainder of the viscus will have a tendency to be displaced by a collection of pus. The fistulous

6 Pascal. Des fistules vesico-intestinales acquises. Paris thesis 39 5 1899.

7 Quoted by Chute (footnote 8).

8 Chute A. L. Two Cases of Vesico-Intestinal Fistula Due to Diverticulitis of the Sigmoid read before the American Association of Genito-Urinary Surgeons New York June 2 1911.

9 Keefe J. W. Diverticulitis of the Sigmoid or Pelvic Colon with Sigmoidovesical Fistula. Boston M. & S. J. 194 577 (April 1) 1926.

10 McKenna C. M. Diverticulum of the Large Intestine Communicating with the Urinary Bladder. J. Urol. 13 443 (May) 1925.

11 Lauterman M. Appendicovesical Fistula. Canad. M. A. J. 6 910 (Oct.) 1916.

12 Bryan. British Journal of Surgery, the Annals of Surgery.

13 Craig R. G. and Lee Brown R. K. Entrovesical Fistula. Surg. Gynec. Obst. 44 753 755 (June) 1927.

14 Cunningham J. H. Rectovesical and Entrovesical Fistulas. Surg. Gynec. Obst. 21 510 518 1915.

15 Pristavescio quoted by Cunningham (footnote 14).

tract between the bladder and the intestinal canal may be a direct communication or a long and tortuous sinus. When the former type, it is generally the result of carcinoma or tuberculosis originating in either the bladder or the rectum, in the latter, it is more frequently the result of an abscess originating between the bladder and the rectum and opening into these regions by apertures situated at different levels.

SYMPTOMATOLOGY

Prior to the establishment of a communication between the bladder and the gastro-intestinal tract, the symptoms are somewhat variable depending on the nature and severity of the disease and on the structure involved. Once a perforation has occurred the symptoms are aggravated and pathognomonic—frequent painful micturitions, the passage of pus, fecal matter and gas via the urethra. If the fecal material is in hard lumps, further difficulties of urination may occur with tenesmus. Feces, however, are not always present in the bladder, the communicating lumen may be so small as to permit solely the passage of gas. But the symptom most distressing to the patient is the uncontrollable escape of flatus, which may occur involuntarily or during the act of straining. The symptoms dependent on the pressure of urine in the rectum are those of proctitis and are seldom of consequence. Later, secondary symptoms occur and, if the suppurative process in the bladder continues, kidney infection with its chain of manifestations takes place and death may ensue.

The prognosis depends on the nature of the primary lesion to which the fistula is secondary. It is naturally most unfavorable in cases in which carcinoma or tuberculosis is the primary cause. In instances in which the communication is due to an inflammatory or traumatic factor, the prognosis is far more favorable.

Treatment is best considered as operative with the radical and palliative phase and nonoperative forms. It must of necessity depend on the nature of the etiologic factor producing the fistulas. When the primary cause is a traumatism or an inflammatory process, such as simple ulceration, abscess or rectal stricture, operative measures offer considerable, but when the intestinal vesical communication is due to carcinoma or a tuberculous process originating either in the bladder or in the alimentary canal, operative measures are seldom successful. In instances in which the fistula appears to have followed the rupture of an intestinal abscess or is due to tuberculous ulceration or to syphilis spontaneous healing under appropriate nonoperative treatment has been known to take place.

Operative Methods—1 Abdominal section and separation of the intestines from the bladder at the point of union and repair of the opening in both organs, or, if necessary, a resection of the bladder and intestine so as to include the tract of the fistula, and the repair of the incision by the method most appropriate in the individual case. 2 Perineal operation through the vagina or perineal surface in cases in which the communication has been demonstrated to be low down in the rectum. Operations conducted from this region have seldom permitted of closing the rectal and vesical opening, but if separation of the adherent intestine from the bladder is accomplished the wound packed, the bladder drained by a retained catheter, the rectum pricked above the rectal opening and the bowels prevented from moving by a liquid diet and liberal use of opiates, success has often been obtained. 3 Colostomy, with the object in view of diverting the flow of feces from

the bladder. This is the ideal procedure. The important point to be determined before performing a colostomy is the location of the intestinal opening, for if the communication is in the small intestine or cecum, colostomy would be without value. 4 Suprapubic cystotomy, with the end in view of allowing free drainage for the fecal contents of the bladder. This palliative measure often resorted to, should be reserved for cases of extensive carcinoma when little else can be done.

Several other considerations as to the etiology of these fistulas must be borne in mind in respect to radium therapy. Several cases of extensive ulceration in the posterior bladder wall following irradiation for carcinoma of the bladder and prostate have been noted. Two cases of slough of the bladder wall were observed¹⁶ with a large fistula. Both patients died.

In another case¹⁶ a fistula developed following irradiation with gold seeds for extensive carcinoma of the uterus. Irradiation of the lateral fornices was too great and the slough eventually resulted in a communication between the intestine and the bladder. Naturally these cases are not reported widespread. It is my opinion that an activating cause in certain cases wherever diverticulitis may exist lies in the presence of postprostatic infection. This focus may have been smoldering for years, contingent on infection in the bladder, and an increased bladder activity set up an inflammatory process which eventually established a fistula of the type described. Two personal cases are recorded in which the passage of gas through the urethra was not noted until after the removal of the prostate.

REPORT OF CASES

CASE 1—A P, seen in January 1925 complained of a sense of pressure in the bladder and of smarting on beginning to void. The discomfort abated and disappeared under bladder irrigations and guaiacol. The discomfort returned three months later and this time responded less satisfactorily to treatment. Numerous examinations were made during this time and numerous colon bacilli were found in the urine. There was no residual urine, the frequency was from eight to ten times daily. He was given a careful examination by a gastroenterologist, who felt that he had a colitis and advised a diet. The patient looked and felt well otherwise. A rectal examination revealed a definite infiltration in the rectovesical space and marked fulness with extreme tenderness. Cystoscopy showed a very inflamed bladder and a catheter passed up the left ureter for a very short distance. Numerous small particles of brown material were floating in the bladder, and the possibility of intestinal fistula was suspected. The patient was to go to the hospital for pyelography but refused to do so. Two weeks later he was seen by Dr. Keves who gave him a second cystoscopic examination. At that time a definite opening was noted in the region of the left ureter and a diagnosis of fistula was made. The patient was operated on by Dr. Brewer and cancer of the sigmoid was discovered. The patient left the hospital with an artificial anus and lived one year when he died of the condition. The bladder symptoms disappeared entirely on the establishment of the colostomy.

CASE 2—The patient entered the hospital because of frequency of urination and complete retention. There was from 15 to 20 ounces of residual urine. The patient was operated on for cancer of the prostate. It was noted that the prostatic growth was well encapsulated and the carcinomatous portion extended well into the postprostatic space. An attempt was made to remove this by sharp dissection and both vesicles were cleared out.

It is possible that the rectum may have been injured at the time although in the routine examination of the rectum following the operation no evidence of such an injury could

16 Personal communication to the author.

be made out. The patient returned to the ward in good condition with a retention catheter in place, and five days following the operation the presence of a superficial emphysema was noted. This gradually extended over the entire scrotum following the usual course of urinary extravasation. The retention catheter had meanwhile been dislodged from the bladder and there was a considerable leakage from the perineal wound. The emphysema finally disappeared and when the wound healed it was noticed that the patient passed a small quantity of feces through the urethra. The patient finally left the hospital five weeks after the operation, and for three years following passed gas and feces regularly through the urethra. His general health was excellent; he died of some intercurrent infection in Bermuda three and one-half years after the operation.

CASE 3—D. P. had had bladder symptoms for a period of ten years with a definitely enlarged prostate. The patient had noted an inability to empty the bladder unless sitting down, and considerable pressure was required on the perineum. Perineal prostatectomy was done at St. Bartholomew's Hospital and an enormous prostate was removed. It had previously been possible to pass the examining finger over the summit of the prostate.

The patient had a spirited convalescence and left the hospital six weeks following the operation. The residual urine never disappeared entirely, averaging from 2 to 4 ounces. A rectal examination was not made until one year after the patient left the hospital. At this time it was noticed that a definite papilloma of the anterior rectal wall was present and on prostatectomy this was made out as extending well up toward the sigmoid. The condition improved greatly on rectal irrigations but the urine began to become dirtier and a possible communication between the bladder and the rectum was suspected. Marked fulness was made out in this area and the passage to the rectum had narrowed down to the size of a small catheter. The patient refused any treatment, however, until complete retention occurred on board an ocean steamer. Colostomy was done on his arrival in New York, and the patient lived three years after this time with amelioration of bladder symptoms and a marked improvement in his health. Six months before his death the area between the bladder and the rectum broke down and a moderate fecal discharge was observed through the urethra.

CASE 4—J. H., a minister, had prostatic symptoms for a period of two years, particularly noting straining and urgency, with no great amount of residual. Cystoscopy revealed a large prostate with the bladder greatly inflamed and red in the area of the trigon. On catheterization, numerous gas bubbles followed the irrigation and the patient had also observed an occasional passage of gas through the urethra. The first stage of the prostatectomy was done and the bladder was drained for a period of six weeks. The urine had a fecal odor and methylene blue (methylthionine chloride U. S. P.) injected in the rectum appeared in the bladder urine within two or three minutes.

No evidence of a rectal or sigmoidal growth could be made out, although there was a definite narrowing of the colon in the region of the bladder and sodium iodide injected into the bladder showed evidences of filtering through into the space above and posterior to the bladder. In the operation the prostate was removed with difficulty, owing to firm fixation. The patient had a difficult convalescence and the suprapubic wall was kept open for two months following the operation. At this time the mucosa of the bladder regained its normal appearance and the bladder was allowed to close. The patient's general condition three years after the operation was good and he had no further symptoms from the fistula. A later history was obtained of proctitis and perirectal abscess due to excessive horseback riding over a period of years.

CASE 5—E. R., a Jewess, was admitted to City Hospital in poor condition. The patient was admitted to Harlem Hospital and gave a history of having been operated on three weeks previously. She had applied to the dispensary for treatment and was told that the uterus was tipped and that operation would have to be done from below to remedy the condition. This was carried out (Watkins interposition was probably done) and the patient went home two weeks afterward. She

developed mild abdominal pain, distress with frequency of urination, and pain over the bladder. Three days after admission to the Harlem Hospital she began to pass feces by the urethra, and she was sent to the City Hospital. At the time of the cystoscopy the patient was semimoribund and the cystoscopy was carried on under difficulty. Feces were passing into the bladder and the viscus was washed clear of difficulty. A loop of encrusted suture projected into the bladder anterior to the suture; a large hole was noted which discharged intestinal contents. A diagnosis of traumatic vesico-intestinal fistula was made. The patient died two days later and autopsy showed a large inflammatory mass posterior to the bladder involving the fundus of the uterus, and two loops of ileum in the bladder wall. The sutures bringing the uterus in position had apparently passed through all three structures and following the spread of infection, a fistula had developed.

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ABSTRACT OF DISCUSSION

DR. FRED RANKIN, Rochester, Minn. While this bizarre pathologic condition appears infrequently, it is formidable when it does occur, is difficult to handle, and is frequently attended by high mortality and undesirable end-results. Etiologically, the enterovesical fistulas may be divided into three classes: (1) the congenital group, (2) those due to carcinoma, and (3) those due to inflammatory processes. The latter group, of course, contains the appendiceal cases, which may be divided into (1) those cases in which an acutely inflamed appendix fastens itself onto the bladder and ruptures without abscess formation or without spreading contamination into the peritoneal cavity and (2) those cases in which an appendiceal abscess necroses into the bladder and forms a direct communication between the cecum and the bladder. In my series, I am impressed by the fact that males predominate over females in falling victim to this unfortunate condition, two to one. In the first place, more men have diverticulitis of the sigmoid. In the second place, the uterus is between the bladder, the rectum and the sigmoid and makes an attachment between these organs more difficult. Diverticulitis occurs more frequently in fit short individuals who have a tendency to lead a sedentary life. Physicians seem to be especially prone to develop diverticula. Strangely enough, diverticulitis does not cause more fistulas than does carcinoma, since among my patients there were twelve cases due to diverticulitis, ten to carcinoma and four to inflammatory conditions. The operative treatment of this type of ailment is a difficult one and the tendency to operative failure both from the standpoint of immediate mortality and that of end results, as evidenced by the recurrence of a fecal fistula which drains to the outside this time, is striking. My operative mortality was approximately 10 per cent. In nine of the patients operated on two or more operations were necessary before the fistula was closed. The usual procedure in operating on these patients is a direct attack on the fistula in one stage, attempting to separate the sigmoid or cecum from the bladder and to close the two openings. Because of the amount of inflammation present, failure is frequent, and I think one may well accept Dr. Morrissey's suggestion that a primary colostomy is of great assistance. I have done this myself in three cases and I am convinced that it is a practical method. It sidetracks the fecal current and permits the infection in the bladder to be cleaned up, and in this way likewise allows the kidney infection to be taken care of.

DR. ARTHUR L. CHUTE, Boston. The published case of mine that Dr. Morrissey referred to was an interesting one, but I lost the patient. The case was striking in that the man was passing great numbers of strawberry seeds in the urine. I operated on him finding the fistula low in the pelvis and sewing it up. The man died and at autopsy I found a walled off abscess in the pelvis. I saw another case with Dr. M. H. Richardson in 1910 also reported in the paper to which Dr. Morrissey has referred. This patient was operated on twice, but there was a fatal outcome from a general peritonitis. The only case of this type in which I have had a favorable outcome was that of a patient I saw some six years ago and on whom I did a one stage operation, closing the fistulous opening in the bowel and the one in the bladder. I instituted drainage but he apparently

had a suppurative pericystitis and had to have a lot of drainage for a long time. I had to open up the perineum, but he finally made a good recovery. Those are the only three operative cases that I remember to have seen, though I recollect a woman with this condition who refused operation and who died a short time afterward, but I think of some intercurrent trouble. Dr. Morrissey's suggestion that drainage be done preliminary to operation is very important and should be carried out.

DIAPHRAGMATIC HERNIA IN A CHILD, AGED ONE YEAR

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The increasing number of cases of diaphragmatic hernia reported in recent literature suggests unusual vigilance in detecting this deformity. Nevertheless, its appearance in children under 10 years of age is still considered rare. Apparently this is more indicative of the difficulties of recognition than of the infrequency of occurrence. However, Dodds and Flew¹ roentgenographed every child born in the obstetric hospital in London over a period of eighteen months and found only one case of congenital diaphragmatic hernia in 800 cases, and only one case in 200 postmortem examinations. In Greenwald and Steiner's² series of eighty-two cases in children aged up to 10 years, (1912-1928) only twenty-five were recognized during life. Eleven were operated on, six patients died after operation. Of the five that recovered, two had gastro-enterostomy because in each case it was found impossible to reduce the stomach. Parenthetically, gastro-enterostomy can serve no useful purpose when the stomach is involved in the hernia because the stoma is made in the chamber below the aperture in the diaphragm.

Aue,³ Speik,⁴ Goetsch,⁵ Behrend,⁶ Bettman and Hess,⁷ McFadden,⁸ O'Connell⁹ and Sanders¹⁰ each report a case in which recovery followed operation. Aue operated successfully on a boy, aged 9 years. He also operated on a girl, aged 5 years, who had a recurrence three months later, the parents refused operation a second time and the child died two weeks later from intestinal obstruction. Woolsey¹¹ operated successfully on an infant, aged 35 days, but the child died in one year from acute intestinal obstruction due to a recurrence of the hernia. Brown¹² reports one case and Carman¹³ reports two cases in which operation was performed with fatal termination a few hours after the operation. The three patients, two aged 5 years and one aged 9 years, died from "shock." Thus far, the total number of patients under 10 years of age appearing in the literature as operated on reaches twenty-two, with a total mortality rate of 41 per cent. This rate does not include the two fatal cases from recurrence.

My reported cases have been overlooked by Greenwald and Steiner. Including recurrences in the first patient, I have had seven consecutive cases in which no deaths occurred after operation. For comparison, in 1912 the operative mortality reported by Scudder¹⁴ was 75 per cent, high, because most operations were undertaken for the relief of intestinal obstruction.

A recent case in my series is remarkable because of the extreme youth of the patient and her rapid and uneventful convalescence, which was due, in part to operation undertaken while her condition was good.

REPORT OF CASE

P. L., a girl, aged 1 year, admitted to Truesdale Hospital June 15, 1930, had been delivered normally as the result of her mother's third pregnancy. For seven months the baby seemed well. In January, 1930, she had a slight attack of



Fig. 1—Appearance before operation. A cardiac area (dextrocardia). B right side of diaphragm. C left side of diaphragm. D herniated portion of stomach.

bronchitis, which lasted for two weeks. During this interval the mother heard rumblings and gurglings in the child's body. Believing that this indicated only an unusual degree of gastric fermentation, she felt no particular concern. When 9 months old the child had a digestive upset and refused her feeding. Two weeks previous to admission to the hospital the baby had a severe crying spell, wanted to be held, and refused to lie down. Dr. A. E. Parkhurst of Beverly, Mass., after a complete examination, established the diagnosis of diaphragmatic hernia.

The child had the appearance of a fairly normal baby and weighed 18½ pounds (8.5 kg). With the exception of the thorax, the general physical examination was negative. The cardiac area of dullness extended 4 cm. to the right of the midsternal line. On inspiration a sound vibration was perceptible when the hand was placed lightly over the epigastrium. There was slight dullness over the left base. On inspiration a sound resembling that of bubbling water was heard with the stethoscope over this area. Sometimes this sound was so audible that it could be heard anywhere in the room.

After a barium meal a roentgen examination was made and a diaphragmatic hernia was revealed in the left side with

- 1 Dodds, Gladys H. and Flew, J. D. S. *J. Obst. & Gynec. Brit. Emp.* 35: 737, 1928.
- 2 Greenwald, H. M. and Steiner, Morris. *Diaphragmatic Hernia in Infancy and in Childhood*. *Am. J. Dis. Child.* 35: 361 (Aug.) 1929.
- 3 Aue, O. *Deutsch. Ztschr. f. Chir.* 160: 14, 1920.
- 4 Speik, F. A. in discussion on Portis, M. M. and Portis, S. A. *Diaphragmatic Hernia Diagnosed During Life*. *J. A. M. A.* 75: 1262 (Nov. 6) 1920.
- 5 Goetsch, Emil. reported by Gordon, M. B. and Gollan, D. T. *Traumatic Diaphragmatic Hernia in a Girl of Eight Years of Age*. *Am. J. Dis. Child.* 22: 579 (Dec.) 1921.
- 6 Behrend, M. *Arch. Pediatr.* 41: 408 (June) 1924.
- 7 Bettman, R. B. and Hess, J. H. *Incarcerated Diaphragmatic Hernia in an Infant with Operation and Recovery*. *J. A. M. A.* 82: 2014 (June 15) 1929.
- 8 McFadden, G. D. F. *Brit. M. J.* 2: 45 (July 13) 1929.
- 9 O'Connell, J. C. *Operation witnessed at the Rhode Island Hospital*.
- 10 Sanders, R. L. *Ann. Surg.* 91: 377 (March) 1930.
- 11 Woolsey, J. H. *Diaphragmatic Hernia*. *J. A. M. A.* 80: 2245 (Dec. 31) 1927.
- 12 Brown, H. P. *S. Clin. North America* 9: 1191 (Oct.) 1904.
- 13 Carman, R. D. *Radiology* 3: 26 (July) 1924.

most of the fundus of the stomach in the thorax and the heart displaced to the right. A barium enema excluded the colon. The diagnosis of congenital hernia of the stomach through an opening in the left side of the diaphragm was confirmed.

A few days were necessary for the patient to recover from the fatigue of examination and to reestablish her normal body functions. During this time a thorough evacuation of the barium from the intestinal tract was obtained. June 21, 1930, the operation for repair of the diaphragm was carried out as follows:

The patient was placed on the right side and the left arm was extended over her head. An intercostal incision was made extending through all layers of the thoracic wall, including the pleura. The incision began 2 cm. from the left border of the sternum, it was first carried downward and then along the course of the eighth interspace to the posterior axillary line, where it was directed upward to form a lapel. The upper rib was divided at each end of the incision, the rib flap being turned upward. At this point the anesthetist allowed the lung to remain partially collapsed. This exposed the



Fig. 2—Appearance after operation. A cardiac area (normal). B right side of diaphragm. C left side of diaphragm. D stomach in normal position below the diaphragm.

hernial opening, a para-esophageal aperture, through which the upper two thirds of the stomach and the spleen had passed into the thoracic cavity. There was no sac. If there was one originally, its membranous covering had ruptured, collapsed and was not discernible. Now it was the picture of a false congenital hernia. The edges of the hernia were raised by grasping the margins with Allis forceps. The stomach and spleen were replaced within the abdominal cavity without difficulty. The opening in the diaphragm was closed by five interrupted double-strand sutures of number 5 silk. The suture line was reinforced by single-strand sutures of silk which were placed between the first sutures. Further examination of the diaphragm showed a second defect about the size of a half-dollar (30 mm.) in the anterior and central area of this leaf at the foramen of Morgagni. There was only a thin, serous membrane of pleura covering this defect of the musculature. This area was repaired by infolding the serosa with interrupted sutures of single-strand number 5 silk.

The wound in the chest wall was closed by restoring the divided rib to its normal position and holding it in situ by interrupted sutures of number 2 chromic catgut. The muscles

of the chest wall and their fascia were also sutured, this time with a running stitch. As the final loop of catgut was inserted to close the pleural cavity, the lung was fully expanded. The edges of the skin were united with a continuous lock-stitch of horsehair. The whole wound was reinforced by the use of five silkworm catgut sutures. The patient entered the chest cavity in the ninth interspace and emerged at the seventh.

Immediate postoperative recovery was good. The first day after operation the child's temperature rose to 103 F with respirations at 44. She took fluids well, however. A physical examination failed to reveal any evidence of fluid in the left pleural cavity. The roentgenograms taken five days after operation revealed a shift in the position of the heart toward its normal position and the stomach in its normal location below the left diaphragmatic arch. There was no evidence of fluid.

The baby's convalescence was uneventful. She took nourishment well and appeared to have very little discomfort after the first day. Ten days after operation she was transferred from the hospital to her home, a distance of 70 miles, without incident. The wound had healed by primary union.

In view of this experience and of past observation it is clear that the lives of infants and young children should not remain in jeopardy from failure to deal with hernia of the diaphragm by operation. In a series reported by Woolsey,¹¹ two infants out of twenty-four children were operated on successfully at 31 months and 35 days, respectively. The author says:

Of these twenty-two, at least seven, in none of whom diagnosis had been made, could have been operated on; possibly their lives might have been saved, and seven others of the twenty-two, also without diagnosis, and therefore proper treatment, might have had their lives prolonged if the operation performed later.

When the dangers of unilateral intrathoracic pressure are given careful consideration during operation, the little patients withstand the technical stage of closing the aperture in the diaphragm remarkably well.

The diagnosis of diaphragmatic hernia appears to be more difficult than the operation for its cure. It is necessary to draw on the imagination to realize that respiration and circulation must be greatly embarrassed by the presence of distended stomach and colon in the pleural cavity, with the collapse of one lung and encroachment on the other by displacement of the mediastinum. The heart and lungs must yield increased pressure from the transposed hollow viscera. The volume of space in the pleural cavity which a distended stomach alone can occupy is sufficient to cause death from asphyxia. Such a case was reported by Gibson¹⁵ of Cleveland. Precordial distress, dyspnea, cyanosis, and cough always irregular in time and severity are circulatory and respiratory manifestations of diaphragmatic hernia. Gastro-intestinal symptoms are indicated by interference with the motility of the stomach and intestine when the organs are involved in the hernia. A great variety of symptoms indicating digestive disturbances may simulate peptic ulcer, gall stones, pancreatitis, appendicitis, intestinal stasis and obstruction. A dextrocardia often serves as a key to the diagnosis.

151 Rock Street

15 Gibson, F. S. Diagnosis of Diaphragmatic Hernia with Acute Obstruction. J. A. M. A. 93: 1719 (Nov. 30) 1929.

The Galvanic Current—According to Turrell, the therapeutic effect of the galvanic current is due simply to the heat generated in the tissues and the increased functional activity from the bombardment of the tissue cells.—Shaffer, L. W. *Arch. Dermat. & Syph.* February, 1931.

SYMPATHETIC RAMISECTION IN
SPASTIC PARALYSIS

END-RESULTS OF SIXTY CASES *

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Influenced by the clinical results and the very plausible explanation of sympathetic release, reported by Royle¹ and supported by Hunter,² my colleagues and I have performed ramisection for spastic paralysis in a sufficient number and variety of cases to make a report of them of some value in arriving at a proper estimate of the operation.

Included in this study are eighty-three ramisections: twenty-three cervical and sixty lumbar, with twenty-five left, fifteen right and eleven bilateral. The first analysis was based on the comparative study of a group of operations done in 1925, including twenty lumbar and four cervical operations, another in 1926 and 1927 with sixteen lumbar and six cervical, and a third group in 1928 with twelve lumbar and thirteen cervical operations.

In 1925 the indications specified by Royle in selecting cases were followed closely and only those patients were operated on who had fair cortical control, definite increase in plastic tone, with slow joint position change and hung up reflexes. The average age was greater than in the 1927 or 1928 group. In the latter two groups the mental requirement remained the same, but the state of the muscle tone was not given consideration in the selection of cases. The operative technic was alike in the three groups and the final results were so nearly the same that grouping in this manner offers only one conclusion, namely, that increased plastic tone has no value in selecting cases for operation. This is in accord with the experience of Von Lackum.³

In our series there are seventeen left and fifteen right hemiplegias, eleven paraplegias, fifteen tetraplegias and two triplegias. The cervical operations were done through exposing the brachial plexus and cutting the sympathetic trunk to the fifth, sixth, seventh, eighth, and first dorsal nerve roots. The stellate ganglion was not exposed at any operation. Increased warmth was noted in 40 per cent, but was never so much as present in the lumbar cases.

For the lumbar sympathetic, the trunk was exposed through a lumbar incision and the gray rami from the second through the fifth, and the trunk divided below this point. Postoperative increase in the temperature of the leg was recorded in 100 per cent of the cases. In some an increase in warmth and circulatory tone was present four years after operation. In one case, twelve months later there was an increase of one-half inch in circumference of the calf on the limb that had been operated on and, incidentally, relief during the entire period from a troublesome constipation, existing for several years, by purposely dividing the trunk at the first lumbar enlargement.

Great difficulty has been experienced in making an accurate estimate of the actual effect of ramisection on the final result when a combination of measures has

been followed in treatment of the patients. Primary interest, naturally, was in improving the function of an arm or a leg and frequently the opportunity for watching the effect of ramisection alone was sacrificed by adding other operations. On several occasions a ramisection was done on one side and Stoettel's operation on the other leg with conclusions reported relative to the comparative results. Likewise, we have done stabilization in the feet, Stoettel's operation on both legs, and from twelve to eighteen months later a bilateral ramisection, with notes crediting each operation with a proportionate effect. The methods followed in determining results are open to criticism, because they are lacking in physiologic analysis, but from a practical application they have seemed to convince those working with the cases that a reasonably accurate conclusion may be obtained. A patient who can walk better, can step over objects, climb steps, stand on one leg, pedal a sewing machine and do similar coordinating movements that he could not do before operation is classified as improved and is graded accordingly. While it is true that spastic children above 10 or 11 are optimistic in their attitude following any procedure, we have found that their reaction after twelve or eighteen months combined with that of the parents and friends coincides closely with the estimate independently made on our records.

Examinations did not reveal any difference in the character of reflexes before and after operations. Those patients having a typical hung up knee reflex had approximately the same after operation. It was not possible to observe any difference in the height of the jerk or appreciable variation in the clonus when present. There was noted, however, in cases having most improvement a relative increase in active joint range. This can be measured with fair accuracy at the knee by placing an extensoflexometer on the joint with the patient in a sitting position and measuring the degrees covered in a given length of time, controlled by a stop watch. A practical test is to have the patient move the knees through their greatest range in an easy manner ten times, and it may be found, for instance, that he moves from 160 degrees to 100 degrees ten times in ten seconds. After operation he may do from 170 degrees to 98 degrees ten times in six seconds which shows an increased amplitude and better control of antagonistic muscles.

The record of footprints has not in our cases given any particular information. The entire appearance of the imprint can be changed by increasing or decreasing the speed of walking or otherwise instructing the patient and it has therefore seemed difficult to enforce the same conditions after operation for accurate comparison. Steindler⁴ has done some work with action currents and this may prove a valuable method in making positive physiologic study on the muscles that have been operated on. There was found a change in the frequency and amplitude not observed in the normal muscle.

No change was observed in fixed contractions or in those contractions which develop on attempting motion or excitation, as in the scissor gait equinus or valgus in the foot. Relief of the contractions by other operations has been necessary, but it has been noted that a paraplegic of equal spasticity has better function in the leg with lumbar ramisection and section of the obturator, than with obturator section alone. Three of our

* Clinical cases from the Texas Scottish Rite Hospital medical work from Baylor University College of Medicine.

1 Royle, N. D. M. J. Australia 1: 77 (Jan. 26) 1924. Surg. Gynec. Obst. 39: 701 (Dec.) 1924. M. J. Australia 1: 32 (April 30) 1927.

2 Hunter, J. I. M. J. Australia 1: 581 (June 14) 1924. Surg. Gynec. Obst. 39: 721 (Dec.) 1924.

3 Von Lackum, H. I. J. Bone & Joint Surg. S. 590 (July) 1926. Sympathetic Ramisection in Spastic Paralysis. J. A. M. A. 92: 139 (Jan. 12) 1929.

4 Steindler, Arthur. Alteration of the Action Current of Skeletal Muscles Following Sympathetic Ramisection. J. Bone & Joint Surg. 11: 1 (Jan.) 1929.

patients with paraplegia were identical in deformity and gait. Hips and knees were flexed, the feet were in valgus, there was moderate equinus, and they walked poorly with a labored shuffling gait. This type is fairly common and the posture is due more to muscle weakness than to contractures. Ramisection in these cases was of no value, although a bilateral operation was done in one of them.

Contrary to the experience of Von Lackum³ and Stewart we have never observed an appreciable improvement immediately after the operation. The patients were frequently kept several weeks in the hospital before being sent to the gymnasium, and there is no record of favorable changes before exercises were started. With the advent of gymnasium work there was better response in many cases than that shown in the gymnasium during a test period before operation. In most instances the patients were given supervised exercises beginning on the tenth or fifteenth day and continued from two to three weeks. On readmission after three months they again had supervision for a few weeks, and during the first or second return admission improvement would be noted at first and would generally reach a maximum by the end of twelve or eighteen months. The work in the gymnasium undoubtedly adds a considerable measure of improvement but it cannot be credited with all the results, for in many instances the same care and time have been given prior to operation without appreciable effect but with definite rapid improvement after ramisection. Exercises seem most effective when started some weeks after the operation. Patients are returned for training the short time before discharge, for its value during the stay at home, while waiting for the three months' period admission when it is expected a more satisfactory training schedule may be instituted.

Twenty patients in the series had other operations, some before ramisection a few at the same time, and others after evaluating the effect of sympathetic denervation. These operations were in the nature of multiple Stoeffel's operations or subastragaloid stabilization. Although it is difficult, one may distinguish between results following these operations and those from ramisection. In the latter case, as expressed by many of the older children there is an added feeling of security in standing or walking. The improvement relates more to coordination and equilibrium. The range of knee motion is greater in walking. Movements in the spastic extremities are smoother and more easily carried out. In the tables indicating percentage of improvement, deductions have been made for that due to contributing operations, and in some cases, no improvement is recorded for ramisection, from 25 to 40 per cent is elsewhere credited to these operations. Likewise there are some with a slight percentage for ramisection and are elsewhere given a higher percentage of improvement for gymnasium training.

From our experience with the treatment of spastic paralysis, were it necessary to choose between ramisection and Stoeffel operations with foot stabilization the latter two procedures would be regarded as meeting more indications and giving a higher percentage of improvement in a large group of cases. It is our purpose however, to credit ramisection with whatever of value there may be in it, and to that end groupings have been made for analysis of certain factors that may influence the result of operations.

It must seem obvious that any operation designed to cut the pathways of unfavorable impulses to voluntary muscles should be carried out before excessive damage has been done. Von Lackum recognized that ramisection at an early age, before the pattern of deformity had been established, gave better results than the same operation done late. In our series, the lumbar cases grouped according to the age at the time of operation gave the results shown in table 1.

TABLE 1—Percentage of Improvement Following Ramisection

Number of Cases	Age	Mentality	Percentage Improvement
7	10 to 17	71	1
10	5 to 10	74	14.5
15	11 to 17	73	2
7	14 to 17	70	0

Before making any interpretations from this table, it will be interesting to know whether the figures are influenced by other factors.

The groups presented in table 2 suggest, at least that the age of the patient and the type of plegia are of less significance than severity of the lesion and mental development. Of the fifty-one cases with sixty-two lumbar operations the average gain is 16 per cent. In fourteen cases, no gain is recorded and twelve cases had 25 per

TABLE 2—Factors Influencing Improvement

Number of Cases	Type of Deformity	Average Age	Mentality	Percentage Improvement
5	Left hemiplegia	10.2	73	1
11	Right hemiplegia	10.4	72	1
	Paraplegia and tetraplegia	12	71	1

cent or more. A detail of these two groups is illuminating (table 3).

One must conclude from analysis of these cases that severity of physical disability and the mental development are the two important factors influencing the progress after operation. It is recognized that extreme disability is always more difficult to influence favorably in treatment but if ramisection produces results by release of impulses affecting striated muscle, even in severe cases with poor cortical control there should be some evidence of changed reactions. None were

TABLE 3—Comparison of Cases Showing Gain and Those Not Showing Gain

No gain (14 cases) Above 25 per cent gain (12 cases)	Age	Mentality	Gain
10.4	71.4	41.4	
10.2	71.4	41.4	

observed in the fourteen cases of this group. It is noteworthy to observe a high percentage of improvement in cases having ramisection on both sides. There is apparently an added value to the first. No effect, however, was apparent in the leg that had been operated on when a cervical operation was done nor to the arm when a later operation was done on the lumbar sympathetic. In twelve cases ganglionectomy was substituted for ramisection and comparison showed slightly better results.

The twenty-three cervical cases have been disappointing in general results. At operation the ram were clearly exposed and avulsed. The stellate ganglion was not removed nor was any attempt made to find the branch, from below joining the first dorsal, as described by Kuntz.⁶ The postoperative temperature was slightly

6 Kuntz, Albert. Distribution of the Sympathetic Rami to the Brachial Plexus. Arch. Surg. 15: 871 (Dec.) 1927.

5 Stewart, S. F. End Results of Ramisection in Spastic Paralysis. J. Bone & Joint Surg. 9: 24 (Oct.) 1927.

rured in ten, was marked in three and was not appreciable in ten cases. Eleven cases were not improved by operation, six showed from 10 to 15 per cent and five showed from 25 to 40 per cent improvement. The poor results in this group may come from imperfect operative technique or may be influenced by inadequate postoperative gymnasium work. The latter is true; it might be argued, because after all, most of the good results are due to enthusiastic postoperative training, but it is not in accord with the unprejudiced study made of this series during the past five years.⁶¹

The improvement has not been great and may be duplicated by other measures, yet there is something definitely useful in ramisection which may be added to but not substituted for other procedures in the treatment of spastic paralysis. From 10 to 25 per cent improvement would not appeal to one treating most chronic disabilities, but one is thankful for small gains in spastic paralysis.

TABLE 4—Detailed Data in Cases Not Showing Improvement

Age	Type	Physical Incapacity	Mentality
12	Right hemiplegia	Severe	40
5	Right hemiplegia	Severe	60
5	Right hemiplegia	Severe	60
8	Left hemiplegia	Severe	70
10	Left hemiplegia	Moderate	70
10	Tetraplegia	Severe	50
8	Tetraplegia	Severe	60
14	Tetraplegia	Severe	60
12	Tetraplegia	Severe	55
10	Tetraplegia	Moderate	60
1	Tetraplegia	Severe	60
7	Paraplegia	Moderate	60
18	Paraplegia	Severe	50
16	Tetraplegia	Severe	50

TABLE 5—Detailed Data in Cases Showing Excessive Gain

Age	Type	Physical Incapacity	Mentality	Gain per Cent
12	Left hemiplegia	Moderate	70	30
1	Left hemiplegia	Moderate	90	40*
1	Right hemiplegia	Moderate	75	50
13	Paraplegia	Severe	90	50*
10	Paraplegia	Moderate	90	70*
12	Paraplegia	Moderate	90	40*
7	Paraplegia	Moderate	90	50
6	Paraplegia	Moderate	80	40
17	Paraplegia	Moderate	90	50
10	Tetraplegia	Severe	70	40
1	Tetraplegia	Moderate	65	50*
12	Tetraplegia	Moderate	70	40

Bilateral

EXPERIMENTAL WORK

Operation.—In the early part of 1927, in conjunction with Dr. Fred F. Rogers, physiologist at Baylor University College of Medicine, an attempt was made to duplicate the work of Royle. Six goats were operated on by removal of the left sympathetic trunk, and to obviate any chance of error through irritability about the lumbar muscles from scar tissues each goat was operated on thirty days later on the right side to the extent of exposing the sympathetic trunk but not touching or otherwise damaging it.

Observations.—After recovery from operation no limp or other variation in behavior was noted. At the second operation one month later during the process of anesthetizing rigidity was studied but was so variable in character that it was impossible to note any constant difference in the extremities. Decerebration by transection was done at varying intervals of 60 to 120 days after ramisection. It was found that marked variation existed in the character of rigidity. Two

specimens exhibited identical changes at the examinations, described in Royle's experiments. One had just the opposite reaction, the leg on the side operated on remained rigid and the mate was more flaccid and fell quickly from the position imposed on it. The other three varied in reaction at each of several examinations and could be influenced by posture of the head or changing body position. The observation period covered from three to twelve hours. Postmortem examinations confirming the completeness of sympathetic removal were done in all animals. The conclusion was that on goats, previous sympathectomy does not influence the rigidity of decerebrate specimens.

This was not in accord with the experiments that formed the basis of Royle's clinical work which was shown so convincingly to American surgeons a few years ago. His clinical results and those later of Von Lickum and Stewart are notably good, though the explanation for it appears to be erroneous. Sherrington,⁷ in a study of decerebrate specimens, has described the lengthening and shortening reactions in muscle whereby it maintains any constant length against varying tension. Sherrington⁷ found that the reflex for this tonic contraction existed in the muscle and termed it the myotatic reflex. He thought it was controlled by a somatic efferent impulse and not by the sympathetic as believed by Langlaan,⁸ de Boer,⁹ Royle and Hunter. This holding mechanism proved in smooth muscle and suggested for skeletal muscle by Frohlich and Meyer¹⁰ and by Plant,¹¹ is accepted by Hunter who regards it as plastic tone and through sympathetic control is responsible for the shortening and lengthening reactions of Sherrington. Boeke,¹² Garven,¹³ and Coates and Tiegs¹⁴ have disproved this theory. Muscle shows a marked initial resistance when stretched from any given position, and with increase in stretching there is less resistance developed. This element of tone studied by Rieger¹⁵ and Spiegel,¹⁶ is called the brake mechanism and was found to be influenced by the sympathetics in the work of Kuntz and Kerper.¹⁷

Forbes and Cobb¹⁸ and others are convinced that the entire phenomenon of muscle tone can be explained by the phasic reactions in the simple muscle twitch built up by rhythmic contractions, and they see no reason for dividing muscle tone into two elements, plastic and contractile. They, with Pollock Kanavel and Davis¹⁹ were unable to find any sympathetic influence on muscle tone.

The other view on tonic contractions held by some investigators is that a passive state of contraction is superimposed on the ordinary muscle contraction. In this tonic contraction there is diminished or absent action currents and absence of fatigue. Those accepting

7 Sherrington C S J *J Physiol* 17 211 1894

8 Langlaan J W On Muscle Tone *Brain* 45 434 1922

9 De Boer S Arch f d ges Physiol (Pflüger's) 190 41 1921

10 Frohlich A and Meyer H H *Zentralbl f Physiol* 26 63

1912 quoted by Coates and Tiegs

11 Plant R Arch f d ges Physiol (Pflüger's) 202 411 1921

quoted by Coates and Tiegs

12 Boeke J *Ztschr f mikr anat For chung* 8 561 1927

13 Garven H S D *Brain* 48 380 (Sep.) 1925

14 Coates A F and Tiegs O W *The Influence of the Sympathetic Nerves on Skeletal Muscle* Australian J Exper Biol & Med 5 9 (March) 1928

15 Rieger Untersuchungen über Muskelzuckende Jena 1906 quoted by Coates and Tiegs

16 Spiegel E A *Ztschr f ges Neurol u Psychiat* 51 517 1922

quoted by Coates and Tiegs Spiegel E A and Sternheim F Arch f d ges Physiol (Pflüger's) 190 115 1921 quoted by Coates and Tiegs

17 Kuntz A and Kerper A H *Am J Physiol* 70 121 (March) 1926

18 Forbes Alexander and Cobb Stanley *Physiology of Sympathetic Nervous System in Relation to Certain Surgical Problems* J A M A 86 1984 (June 19) 1927 Cobb Stanley *Physiol Rev* 5 518 1927

19 Kanavel A B Pollock L J and Davis L E *Experimental and Clinical Experiences with Sympathectomy in Spastic Paralysis* J A M A 53 1615 (Nov 15) 1924

61 Section of the cervical trunk below the stellate ganglion in recent cases has given temperature changes in all cases and better results. The technique is described by Royle N D *Sympathetic Trunk Section* M J A. trials 2 436 (Oct 6) 1928

this view are not in agreement with regard to sympathetic influence. The preponderance of evidence favors subservance of muscle tone through spinal pathways, and not under sympathetic control, irrespective of basic differences in conception of muscle tone.

Coats and Tiegs repeated the experiments of Royle and Hunter on fowls and goats and could not corroborate their results, but they did find that muscles deprived of sympathetic control were much more easily fatigued than the normal muscle. This is in accord with the work of Gruber,²⁰ who was able to stimulate fatigued muscle with epinephrine, and of Orbelli,²¹ who could do the same by stimulating the sympathetic supply to the muscle. It is established that skeletal muscle has a dual nerve supply, spinal and sympathetic. There is a marked variance in opinion as to the nature of tonic muscle contractions, but the mass of evidence favors somatic and not sympathetic nerve influence controlling it. Exceptions to this are found in the work of Kuntz and Kerper, experimenting with dogs which corroborates some of the work done by Royle and Hunter. The most definitely proved factor of the sympathetic relation to skeletal muscle is shown in the work of Gruber, Orbelli, and Coats and Tiegs regarding its influence on fatigability. If the sympathetic function is to conserve the strength in muscle and prevent fatigue, the prolonged irritability from continuous impulses could conceivably result in a state of contraction, which might influence unfavorably the existing disability in spastic paralysis.

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RATIONALIZING THE SURGERY OF THE SYMPATHETIC NERVOUS SYSTEM *

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In 1878 Claude Bernard¹ called attention to the remarkable constancy of body fluids and predicted that the delicate adjustments necessary for the maintenance of internal harmony and economy must be dependent on nervous regulation. Today that prediction promises fulfillment. In spite of the present confused state of knowledge in this new field of study, evidence is accumulating that in the region of the hypothalamus there are visceral centers exerting a control over water balance, the metabolism of fats and sugars, vascular adjustments (perhaps even the activities of capillaries and sweat glands), regulation of temperature, and a balanced control of glandular secretions and smooth muscle tonus changes in the internal organs. Evidence is accumulating to indicate that the visceral nervous system, which is the intricate network of neurons by which these activities are affected, regulates and, in turn, is affected by the pH of body fluids, influences and expresses the activity of certain glands of internal

secretion, controls the mobilization of leukocytes and other cytologic defense mechanisms, has some relation to the formation of antibodies, and is important in the changes associated with protein sensitization and anaphylactic shock.

Further, it is known that this system is capable of abnormal activity in any of its several divisions and that the upsetting of the delicate internal balance which follows this disturbance of function may provide the underlying cause or at least prove a contributing factor in the development of certain clinical syndromes, such as thyrotoxicosis, diabetes and peptic ulcer.

THE VISCERAL NERVOUS SYSTEM

The visceral nervous system is an elaborate and complicated network of neurons over which are conveyed impulses to and from brain and spinal centers that affect the function of glands and smooth muscle in all parts of the body. It is made up of two primary divisions, the *craniocervical*, or *parasympathetic*, division and the *thoracolumbar*, or *sympathetic*, division. These two divisions appear to be antagonistic to each other and maintain normal function in the organs they supply by a delicately balanced control.

At the present time, interest centers in the sympathetic division. There are numerous reasons for this: first, the evidences of overactivity of portions of this division are coming to be recognized, second, its peripheral pathways are relatively accessible to surgical attack, finally, no dangerous after-effects have been noted following surgical removal of parts of this division.

THE SYMPATHETIC NERVOUS SYSTEM

Arising from cells in the lateral column of gray matter in the spinal cord from the first thoracic level above to the second lumbar level below are neurons termed "preganglionic neurons," over which must pass all those impulses expressing the functions of the "lumbodorsal outflow" which are termed the sympathetic nervous system. The fibers of these preganglionic neurons leave the cord by the anterior roots and enter the sympathetic chain of ganglia by way of the white rami communicantes, where they turn upward or downward for varying distances to end in a sympathetic ganglion. Here they are in synaptic relation to postganglionic neurons which leave the primary chain to pass by various pathways to the smooth muscle or gland that they supply. The postganglionic neurons that supply visceral tissues in peripheral parts of the body turn back from the ganglionic chain by way of the gray rami communicantes to join the spinal nerves and from them are distributed segmentally to the blood vessels, sweat glands and erector pili muscles.

POINT OF SURGICAL ATTACK

The ideal sympathectomy would consist of a selective division of all the postganglionic neurons that supply a particular part of the body. In the case of an internal organ the pathways of these neurons is so complicated that it is customary to interrupt them surgically near the organ itself. A partial sympathectomy is accomplished by stripping off the plexus of fibers around the main artery of supply to the organ. Such a procedure doubtless also interrupts parasympathetic fibers and has the added disadvantage of being an incomplete denervation.

In the case of sympathectomy for an extremity the problem is still more complex. It is obviously impossible to divide sympathetic neurons after they have

²⁰ Gruber C. M. *Am. J. Physiol.* 1914 **61**: 475 (Aug.) 1922
62: 438 (Nov.) 1922, *J. Pharm. & Exper. Therap.* **23**: 335 (June) 1924

²¹ Orbelli L. *J. Petrograd M. Inst.* **6**: 8 1923
* Read before the North Pacific Surgical Society, Tacoma, Wash. Dec. 5, 1930.

¹ Bernard Claude. *Leçons sur les phénomènes de la vie communs aux animaux et aux végétaux*. Paris: Ballière, **1**: 111, 1878.

² Bard P. *The Central Representation of the Sympathetic System*. *Arch. Neurol. & Psychiat.* **22**: 230 (Aug.) 1929. Bailey, Pervival and Bremer, Frederic. *Experimental Diabetes Insipidus*. *Arch. Int. Med.* **28**: 73 (Dec.) 1921. Camu J., Roussy G. and LeGrand A. *Étude anatomopathologique des lésions expérimentales provoquant le syndrome adipo-génital chez le chien*. *Compt. rend. Soc. de biol.* **86**: 1070 1922. Lenfield Wilder. *Diencerphalic Autonomic Epilepsy*. *Arch. Neurol. & Psychiat.* **22**: 358 (Aug.) 1929.

reached the spinal nerves. A partial sympathectomy is accomplished by periarterial sympathectomy, or the removal of a short portion of the artery. These procedures may have limited indications but are objectionable because of the very incomplete denervation that results and the impermanence of the result. A more complete division can be accomplished by cutting the gray rami, but the usual operation consists in excision of sympathetic ganglions so as to prevent impulses from the preganglionic neurons reaching the postganglionic. The chief objection to this operation lies in the fact that large areas beyond the part selected for denervation are robbed of their sympathetic supply.

Thus, the removal of the upper two thoracic sympathetic ganglions for the cure of Raynaud's syndrome affecting an upper extremity also affects the head and neck and important thoracic viscera. The customary excision of the second, third and fourth lumbar ganglions in the treatment of lesions involving the lower extremity affects pelvic and lower abdominal viscera as well.

The advantage of these two operations is that they result in a more complete interruption of sympathetic pathways than can be secured by other procedures, and in the cases treated in this fashion no serious after-effects have been observed.

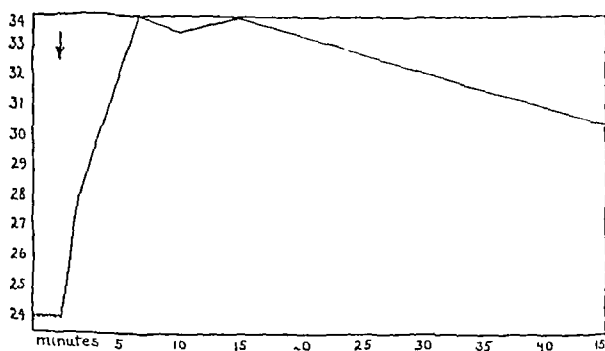


Chart 1.—Skin temperature after injection with procaine hydrochloride in Miss G. R., aged 23 with chronic arthritis: solid line left toe; broken line right toe; constant temperature reading 30°C (86°F); needle reading —5°. In the charts the time of injection is indicated by an arrow.

SURGICAL TREATMENT OF CLINICAL SYNDROMES

The earliest operations performed on the sympathetic nervous system for the relief of asthma, exophthalmic goiter and angina pectoris have fallen short of expectation in their results. They demonstrated, however, what has been recently clearly indicated by the work of Cannon,³ that visceral tissue is capable of continuing a fairly normal function even in the absence of portions of the sympathetic chain.

More recently Royle⁴ has advocated sympathectomy for spastic conditions of skeletal muscle. I think it may be said that in this particular field the results have again fallen short of what has been hoped. There have been cases that have shown clinical improvement after operation, but results have not been constant and Royle's interpretation of his results have not been accepted by physiologists.

At the present time many of the best surgeons are attacking a wide variety of clinical syndromes by sympathetic ganglionectomy. The diseases so treated

make up a surprisingly heterogeneous assembly, yet analysis reveals certain common characteristics that permit of an approximate classification into three groups.

In group 1 are listed those syndromes in which the visceral pain is the major characteristic:

- 1 Angina pectoris
- 2 Painful amputation stumps
- 3 Tabetic crises
- 4 Causalgia
- 5 Inoperable carcinoma
- 6 Dysmenorrhea (?)
- 7 Gastralgia (?)
- 8 Trigeminal neuralgia (?)
- 9 Nephralgia (?)

In group 2 occur those gastro-intestinal disturbances which it seems reasonable to ascribe to overactivity of the sphincter muscle:

- 1 Hirschsprung's disease
- 2 Pyloric stenosis
- 3 Intussusception
- 4 Cardiospasm
- 5 Globus hystericus (?)
- 6 Spastic constipation (?)

In group 3 are found a variety of clinical syndromes whose single striking characteristic is a functional limitation in blood supply:

- 1 Raynaud's disease
- 2 Scleroderma
- 3 Acrocyanosis
- 4 Chronic arthritis
- 5 Chronic ulcerations
- 6 Spastic paralyses
- 7 Endarteritis
- 8 Retinitis pigmentosa
- 9 Vulvar kraurosis

A WORKING HYPOTHESIS

I have long contended⁵ that spasm of smooth muscle of blood vessels is capable of giving rise to pain in exactly the same way that spasm of smooth muscle of the gastro-intestinal, urinary and biliary tracts may furnish adequate stimuli for pain. It seems to me to be probable that angina pectoris, causalgia, the pain associated with Raynaud's disease and certain cases of painful amputation stump may all be due, either directly or indirectly, to abnormal changes in tonus of blood vessels.

If, then, it is possible to explain the pain syndromes as due to abnormal tonus of vessels, the gastro-intestinal group to overaction of sphincters, and the third group to reflex diminution in blood supply, it is immediately apparent that all three groups have a single common characteristic—spasm or hypertonus of smooth muscle.

Physiologists have long taught that one of the primary functions of the sympathetic nerves has been to subserve tonus of smooth muscle and are coming to recognize that in human beings an overactivity of certain parts of the sympathetic nervous system may be expressed as spasm or hypertonus of smooth muscle. Thus there is a physiologic explanation of these apparently heterogeneous clinical syndromes, and a logical answer as to why sympathectomy may result in improvement. While my own experience has been limited those cases I have seen which appear to have been benefited by sympathectomy show results that may be reasonably explained as due to a release of hypertonus or spasm of smooth muscle. Doubtless there will be

³ Cannon W. B., Newton H. F., Bright E. M., Menkin V. and Moore R. M. Some Aspects of the Physiology of Animals Surviving Complete Exclusion of Sympathetic Nerve Impulses. *Am. J. Physiol.* 89: 84 (June) 1929.

⁴ Royle A. D. Treatment of Spastic Paralysis by Sympathetic Ramisection. *Surg. Gynec. Obst.* 39: 701 (Dec.) 1924.

⁵ Livingston W. K. The Blood Vessels as a Possible Source of Visceral Pain. *Am. Heart J.* 5: 559 (June) 1930. *Visceral Pain*. *N. Sentinel* 25: 124 (March) 157 (April) 1930.

found exceptions to such a sweeping statement, but, until it is possible to ascribe to the sympathetic nervous system functions that the physiologist is not now able to credit it with possessing it seems that this simple explanation should be adhered to

CHRONIC ARTHRITIS

The characteristic functional limitation in blood supply said to be common to group 3 is not always immediately apparent. At first glance, chronic arthritis might appear to be an exception. However, close study of patients with chronic arthritis reveals that many of them exhibit cold, pale and clumsy extremities in addition to the arthritic changes. It is true that there are cases of this disease in which such superficial evidences of limited blood supply do not exist, but it is significant that almost without exception the cases that are benefited by sympathectomy are those in which these conditions are present before operation. That the change in the joints might also be due to a restricted blood supply has been suggested by Bankart.⁶ He says: "During life the joints are not passive pieces of mechanism but living structures which react to use like other living tissues. Every functional use of a joint is in a sense an injury, that is friction and pressure tend to wear

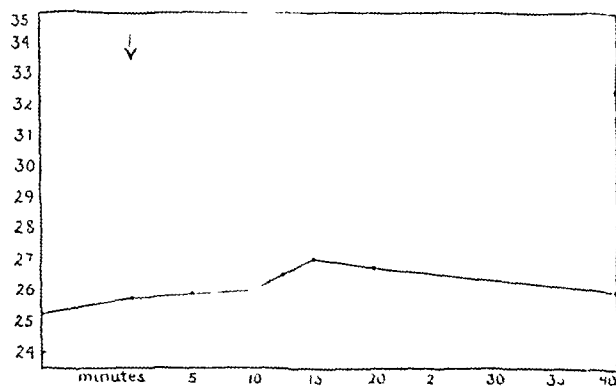


Chart 2—Skin temperature after injection with procaine hydrochloride in Miss M. D. aged 33 with arthritis deformans. Solid line, left toe; broken line, right toe; constant temperature reading, 31°C (88°F); needle reading — 42.

away the opposed articular surfaces. This normal wear is at once made good by an increase in blood supply and nutrition which always accompanies function in normal tissues, hence the balance between wear and repair is dependent on an adequate vascular response to function. If not balanced there is a wearing away of the surfaces, and products of degeneration give rise to irritation which makes itself evident in hypertrophic changes at the periphery where the blood supply is sufficient. Thus the characteristics of osteo-arthritis are degeneration leading to atrophy, erosion and eventual disappearance of the cartilage of the joint and hypertrophy leading to the formation of osteophytes at the periphery."

In one of my cases of chronic arthritis in which a unilateral lumbar ganglionectomy has been performed, the circulation in the foot on the side that was operated on is so much improved that the temperature of the skin remains 8 degrees C. warmer than the other foot during exposure. With this improved circulation there has been a lessening of deformity, a return of the ability to move the ankle, which had been absent for two years, and a sense of warmth and comfort in the entire extremity. Observations of this kind would

seem to confirm the hypothesis that vascular spasm is at least a contributory factor in certain cases of chronic arthritis.

ENDARTERITIS OBLITERANS

The casual observer might have even greater difficulty in understanding the relation of smooth muscle spasm to obliterative lesions of arteries. In cases of this type, attention has been so engrossed with the condition of the larger vessels that a consideration of the functional condition of the vascular bed of smaller vessels and the possibility of a concomitant vascular spasm has been relatively neglected. I am convinced that obliterative changes in an artery and a functional spasm are frequently interdependent.

When an artery is in spasm there is of necessity a slowing of the blood stream in its lumen and perhaps a limitation of blood supply to its own wall as a result of its strong contraction. Long continued or frequently recurrent spasm might well lead to degenerative changes in the wall of the artery, or conduce to an increase in obliterative lesions already present. It is of interest in this connection to note that patients suffering from Raynaud's disease usually give a history of early attacks characterized by extreme pallor, considerable pain and unsatisfactory circulation between attacks. Later it is noted that the pallor is replaced by cyanosis, the attacks may be precipitated by other conditions than cold and a more or less constant impairment of circulation is present. In these late cases degenerative changes in the digital arteries may be demonstrable. Sir Thomas Lewis considers cyanosis rather than pallor to be characteristic of Raynaud's disease and believes that the degenerative changes in the peripheral vessels are the primary cause of the attacks. Most observers, however, feel that the attacks are due to reflex disturbances and consider the changes in the vessels to be secondary or late effects.

Not only is vascular spasm conducive to organic change but the presence of organic change may be a cause of spasm. Sudden obliteration of an artery may be followed by sudden constriction peripheral to the obstruction. Thus, in a case of embolus in a femoral artery I noted that the distal portion of the artery was contracted to a firm, pale, cord-like state. Dr. Charles Lund of Boston tells me that in four cases of arterial embolus for which he has performed an embolectomy the artery was in spasm beyond the obstruction in each case and that observation of the leg after operation seemed to indicate that the spasm persisted for some time after the embolus was removed. It is difficult to explain such observations unless it be assumed that the presence of the obstruction or a sudden ischemia of the vessel wall results in a reflex spasm. Anything that interferes with the nutrition of the vessel musculature may lead to spasm and it is reasonable to assume that lesions in the lumen of arteries may be a cause for an associated spasm or hypertonus. Whether or not this assumption is accepted the fact remains that many cases of obliterative disease of the arteries show an additive element of spasm. Of course, there are cases that have only obliterating lesions present, but these cases do not yield to sympathectomy. It is only those cases of endarteritis in which vascular hypertonus or spasm is present that the surgeon feels justified in submitting to operation. The problem that confronts the surgeon is how to differ

⁶ Bankart, A. S. B. Chordotomy in the Treatment of Osteo Arthritis of the Hip. *Lancet* 2: 378 (Aug. 24) 1929.

⁷ Lewis, Thomas. Experiments Relating to the Peripheral Mechanism Involved in Spasmodic Arrest of the Circulation in the Fingers. A Variety of Raynaud's Disease. *Heart* 15: 7 (Aug.) 1929.

entire and estimate the relative importance of these two factors in a given case

Sympathetic ganglionectomy is a major procedure requiring precision and skill. Before submitting his patient to this procedure the surgeon must be convinced that the patient will withstand a major operation and in addition, must conscientiously attempt to answer three questions:

1. How much reflex vascular spasm is present in this case?

2. What ganglions must be removed to release the vessels involved?

3. Have organic changes progressed to a degree that will obviate a good result?

METHODS TO OBTAIN A PROGNOSIS

Before seeking an answer to these questions it is of interest to note that most of the patients in this field of surgery seek symptomatic relief by the use of local heat. They usually state that their local lesions and symptoms improve during attacks of fever. Experience has further taught that any method favoring hyperemia may prove of benefit. This may be achieved by counter-irritation, local heat, constrictive hyperemia treatment, protein shock, spinal anesthesia, natural sleep or general anesthesia.

These observations suggested two methods for obtaining a prognosis. The first method is known as "oscillometry."⁸ A rubber cuff placed around the involved extremity at various levels is inflated sufficiently to transmit pulse oscillations to a movable needle or a pen writing on a revolving paper disk. Cases with vascular spasm may show an abnormal restriction in the amplitude of pulse oscillation, particularly after exposure to cold. A marked increase in the swing after a hot bath is interpreted as indicating that the vessel is capable of dilatation and argues against advanced occlusive disease. This method has many faults, chief among which is the fact that it measures only the changes in the large vessels and gives no information as to the functional condition of the vascular bed. It is of limited value.

A better method is the so-called fever test.⁹ This consists in the production of an artificial fever by the injection of typhoid vaccine or antigen and the accurate measurement of changes in mouth and local skin temperatures. The rise in skin temperature of the involved extremity is divided by the rise in mouth temperature to obtain a "vasomotor index." Thus a patient showing a rise of 12 degrees in the temperature of a toe during fever, while in the same interval the mouth temperature rose 3 degrees, would be said to have a vasomotor index of 4. A high vasomotor index is interpreted as indicating a considerable element of vascular spasm and favoring operation, while low values indicate advanced occlusive disease in which operation is contraindicated.

METHOD OF CHOICE

The best method consists in the observation of the changes that follow the selective injection of sympathetic ganglions with procaine hydrochloride. In applying this method accurate measurements of the skin temperature of the involved extremity are taken with a thermocouple. Then an injection of procaine solution

is made in the region of the ganglions that are suspected of conducting the impulses responsible for the vascular spasm. An accurate injection should produce a temporary block which simulates the effect that may be expected from surgical extirpation of these ganglions. A rapid and marked rise in peripheral skin temperature indicates that spasm has been present and shows that the vessels are capable of dilatation. In the presence of advanced obliterative lesions in which there is relatively little hypertonus of vessels the rise is slight and slow in making itself evident. This method not only gives reliable information as to the condition of the vessels but indicates the exact point for surgical attack.

In cases in which pain is the major characteristic it is possible to differentiate visceral pain from somatic pain by this method of direct injection. Relief from pain following injection is a definite indication that the surgical interruption of these pathways will afford lasting relief. Failure to relieve the pain indicates either that the injection was improperly made or that the pain impulses do not follow these sympathetic pathways.

In cases of chronic arthritis I have found this method of great value. The accompanying charts represent the skin temperature curves of certain of these cases after injection with procaine hydrochloride. In each instance in which ganglionectomy was later performed the skin temperature of the side that was operated on has

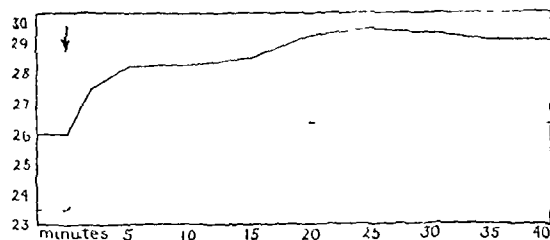


Chart 3.—Skin temperature after injection with procaine hydrochloride in Mr. J. with endarteritis obliterans, right toe (indicated by solid line) involved; constant temperature reading, 30 C; needle reading, —6.

remained permanently elevated, closely approximating the maximum rise obtained during the preoperative test. In contrast charts indicating a great deal of vascular spasm a final chart is presented to show the slow and limited rise in temperature that results from injection in a case of advanced endarteritis obliterans. Any such curve as this contraindicates operation.

SUMMARY

An attempt has been made to classify the varied group of clinical syndromes for which sympathetic ganglionectomy has been advocated. On the basis of previous work, it is contended that pain impulses may arise from abnormal changes in tonus of peripheral blood vessels and it is suggested that spasm of the smooth muscle of vessels may account for many of the diseases classed in the group of visceral pain syndromes. The group of gastro-intestinal disturbances may be explained as due to hypertonus of sphincter muscle and for the third group it has been suggested that there is a common characteristic of functional limitation in blood supply. It seems probable, therefore, that smooth muscle hypertonus or spasm is a common characteristic of all the syndromes under discussion. Such a concept furnishes a working hypothesis which conforms with our present physiologic knowledge and affords a rational explanation for the beneficial results obtained by sympathetomy.

⁸ Buerger, Leo. Oscillometry in Nelson's Living Surgery, 4: 270.
⁹ Adson, A. W. The Surgical Indications for Sympathetic Ganglionectomy and Trunk Re-education in the Treatment of Diseases Resulting from Vasomotor Spasm of Peripheral Arteries. Bull. New York Acad. Med. 6: 17 (Jan. 25) 1910. Adson, A. W. and Brown, C. F. Thoracic and Lumbar Ganglionectomy in Peripheral Vascular Disease. J. A. M. A. 94: 230 (Jan. 25) 1930. Physiological Effects of Thoracic and of Lumbar Sympathetic Ganglionectomy or Section of the Trunk Arch. Neurol. & Psychiat. 22: 323 (Aug.) 1929.

The best method for obtaining a reasonably accurate estimate of the benefit that may be expected to follow sympathectomy consists in the selective injection of ganglions with procaine hydrochloride. The method is not particularly dangerous or difficult, and it accurately reduplicates for a short period the condition that may be expected to obtain more permanently after surgical excision of particular ganglions. It affords a method for differentiating somatic from visceral pain and, of more importance, should prove of great value in enlarging the field for the application of this new type of surgery.

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Special Articles

THE INDISPENSABLE USES OF NARCOTICS INTRODUCTION

MORRIS FISHBEIN, M.D.
CHICAGO

For many years, physicians have had to meet the charge that they were responsible to a considerable extent for cases of drug addiction through the unnecessary prescribing of narcotics, through the prescribing of narcotics over a long period of time when a short period would have sufficed through the prescribing of proprietary remedies containing narcotic drugs without appreciating the presence or amount of narcotic drugs present, through failure to use substitutes for narcotics on some occasions, and, indeed even for having consciously prescribed narcotics for those addicted and who might have been controlled in some other manner. Obviously physicians must take responsibility for some drug addiction. These articles are planned to diminish as far as possible the cases for which physicians may be blamed.

One of the chief difficulties in the control of drug addiction is the absence of actual knowledge concerning the number of drug addicts, the causes of drug addiction and the methods of its promotion. There seems to be no doubt that the vigorous enforcement of the Harrison Narcotic Act has resulted in a lessening of narcotic addiction. It is the opinion of the Commissioner of Narcotics, who is responsible for narcotic law enforcement, that the control of legal importation, manufacture and distribution seems to be reasonably effectual. He says, furthermore, that the quantity of narcotic drugs of domestic manufacture that is diverted to illicit use is so comparatively negligible as to give no cause for alarm.

Dr W. L. Treadway of the U. S. Public Health Service is convinced that the first factor in drug addiction is ease of access to the drug. From the experience of the Division of Mental Hygiene of the Public Health Service, Dr Treadway believes that the immediate or precipitating causes of addiction may be for convenience or divided into first previous use of drugs in medical treatment second self-treatment for relief of pain, third, recourse during emotional distress fourth, influence of other addicts both in the community and in prison, and fifth indulgence for the sake of curiosity, thrill, or bravado. Among 1,225 addicts where the cause for addiction was known 23 per cent were due to previous

use of drugs in medical treatment, 17 per cent to self treatment for relief of pain, and 52 per cent to the remaining three causes that have been mentioned.

Addiction is more readily induced in some persons than in others. "The most important predisposing cause," says Dr Treadway, "is an inherent mental or nervous instability. On the one hand there is the normal individual, on the other the frank or gross mental disorders, and in between a large group who have been designated as a temperamental type, but who are in reality suffering from the psychoneuroses or dementia praecox type of disorder. Evidence is at hand, however, to show that addiction may be induced by the injudicious use of drugs in persons apparently free from any nervous or mental instability, and conversely, that due care in administration may avert this result even in the unstable."

The report of the Advisory Committee in Traffic in Opium and Other Dangerous Drugs of the League of Nations, published in November, 1930, indicates that only a small proportion of the narcotic drugs manufactured in the United States is clandestinely used for nonmedical purposes, and that considerable amounts of morphine, heroin and cocaine are being smuggled into the United States on the East coast and large quantities of prepared opium on the West coast. A careful consideration of the available reports and studies indicates that there are not more than a hundred thousand drug addicts in the United States at the present time. As an indication of the extent of such illegal traffic during the year July 1, 1927, to July 1, 1928, there were seized 3,718 pounds of opium, 5,048 ounces of morphine, 9,305 ounces of heroin and 1,122 ounces of cocaine. For the year ended June 30, 1930, there were seized 23,948 ounces of various narcotic drugs and preparations. It is thus apparent that the physicians are by no means responsible for all the narcotic addiction and that the problem is largely a police problem as well as a medical one. Notwithstanding this fact, it is the duty of every physician to limit the prescribing of narcotic drugs to cases in which the prescriptions are essential, and in which, after due thought, he is convinced that no other drug will suffice.

The problem in the United States is not more serious than in some other parts of the world. America, however, uses more narcotics for medicinal purposes than any other country. According to W. E. Dixon, America requires 245 mg of morphine per capita, Europe, 152 mg, Asia, 8 mg, and Africa, 24.5 mg. Professor Dixon suggests that it is possible that Americans are more sensitive to pain than people of other countries. An investigation of the number of women who required narcotics during childbirth shows America, 70 per cent, Great Britain, 50 per cent, Spain and Russia, 5 per cent.

All sorts of schemes have been suggested for controlling more certainly the manufacture and use of narcotics. The United States has a greater border to patrol than any other nation, so that the prevention of smuggling is much more difficult.

The problem of narcotic addiction merits the attention of physicians for many reasons. The control by statute of the prescribing of alcohol, and the definite limitations of the amount prescribed, indicates that the medical profession must do everything possible to minimize the prescribing of narcotics in order to make unnecessary further restrictive measures. Physicians should give more serious consideration to the materia medica, pharmacology and therapeutics of narcotics.

Physicians may, by the exercise of more thought in practicing, do much to avoid censure in relation to narcotic addiction. They may substitute, whenever possible, non-habit-forming drugs in the place of morphine or other opium alkaloids. When narcotics are indispensable, however, as shown in this series of articles, no more should be administered than is necessary to achieve the desired end. Patients requiring daily administration should be seen often by the doctor and the amount of drugs ordered or supplied should not exceed that required by the patient until seen again. Independence of administration on the part of nurses should be strictly limited to prescription and any change in treatment should be in writing.

The patients should never be informed of the nature of the drug used, nor of the dose of drug administered. The patient should never be permitted to administer the drug hypodermically to himself. Use of the drug should be discontinued immediately when no longer required, and if craving has resulted, close supervision and appropriate treatment should be maintained until the patient has been rendered independent of the drug.

The National Research Council is attempting to solve the problem in several ways. It is promoting research with a view to finding some synthetic preparation derived from opium which will have all the qualities of opium and narcotics without the tendency to establish addiction. Believing in the importance of proper education of the medical profession, the Committee on Drug Addiction of the Division of Medical Science of the National Research Council and the Division of Mental Hygiene of the United States Public Health Service in cooperation with the American Medical Association have arranged for the preparation and publication of a series of articles on the indispensable uses of narcotics. The expense of preparation has been met through an appropriation from the Bureau of Social Hygiene, Inc. This series, after its publication in *THE JOURNAL*, will be republished in book form. The articles to be published include the following contributions:

- The Indispensable Uses of Narcotics in Surgery Elliott C Cutler and John W. Holloway, Cleveland
- The Indispensable Uses of Narcotics in Medicine Frederick Tice, Chicago
- The Indispensable Uses of Narcotics in Obstetrics and Gynecology Joseph B. DeLee, Chicago
- The Therapeutic Uses of Narcotic Drugs Horatio C. Wood, Jr., Philadelphia
- The Indispensable Uses of Narcotics in Local Anesthesia Geza de Takats, Chicago
- The Indispensable Uses of Narcotics in the Practice of Otolaryngology Robert Sonnenschein, Chicago
- The Indispensable Uses of Narcotics in the Treatment of Coughing Robert A. Hatcher, New York
- The Indispensable Uses of Narcotics in the Treatment of Diseases of the Gastrointestinal Tract Robert A. Hatcher, New York
- Psychotherapy as a Substitute for Narcotics R. B. Richardson, Toronto, and T. H. Weisenburg, Philadelphia
- The Abuse of Narcotics Bernard Fantus, Chicago
- Narcotics in Proprietary Remedies Arthur J. Cramp, Chicago
- The Legal Aspects of the Use of Narcotics William C. Woodward, Chicago
- The Chemistry of Barbitol Substitutes for Narcotics Paul N. Leech, Chicago

The first of these articles appears in the current issue of *THE JOURNAL* and the remaining articles will follow.

THE INDISPENSABLE USES OF NARCOTICS

NARCOTICS IN SURGERY*

ELLIOTT C. CUTLER, M.D.

AND

JOHN W. HOLLOWAY, M.D.

CLEVELAND

The great debt of surgery to narcotics, and especially to those drugs which from time to time create such a desire for repeated amounts that they are referred to as habit forming, is acknowledged by all surgeons. Without narcotics there could not be surgery as we understand it, nor would there be anesthesia. Even without the habit-forming narcotics—cocaine, opium and their derivatives—the medical profession would find itself severely handicapped, for perhaps, above all, medicine is a merciful calling and, although it yields some specific cures, its chief reason for existence is the relief of suffering.

In order that the uses of habit-forming drugs in surgery may be clearly outlined, we have decided to divide our discussion into three parts: (1) the preoperative and diagnostic period, (2) the operation with its preparatory and recovery phases, and (3) the care of patients with inoperable disorders, including those cases of cancer in which surgery is inadvisable. In the third group we are eventually led to a discussion of euphoria and its place in a civilized community, a matter only touched on here, and perhaps better and more wisely left for another discussion.

THE PREOPERATIVE PERIOD

The preoperative period should properly be spoken of as the "study period." It is the time when a proper diagnosis should be made, and, although it may necessitate innumerable tests, the outstanding requirement is that the patient during this period be kept as uninfluenced by drugs as possible. Pain is one of the chief diagnostic signs, and if the diagnostician is robbed of its significance through the careless and often too free use of morphine and its derivatives, its aid is removed. Those who have seen patients with abdominal or intracranial disease rendered so comfortable and even drowsy that all complaints have disappeared know the danger of the premature use of drugs. However, if the investigative period is indicated for the clarification of the diagnosis, it should be carried out as expeditiously as possible, for to subject a patient to continuous pain over any great period of time is a decided reflection on one's diagnostic acumen. In the excruciating pain of smooth muscle colic, as seen in patients with renal and biliary calculus, the use of morphine would seem to find full justification. In this group of disorders, however, the administration of atropine and the application of heat may prove efficacious, and this therapy deserves wider usage.

It is in the field of traumatic surgery that morphine again assumes an important role and because of its

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The articles are prepared under a plan of cooperation between the American Medical Association, the Committee on Drug Addiction of the Division of Medical Sciences of the National Research Council, and the Division of Mental Hygiene of the United States Public Health Service. Their object is to reduce the legitimate use of addiction drugs to a minimum by replacement, wherever possible, with other remedies that will accomplish the desired result. The physicians of the United States are the essential group in any such attempt and it is hoped that the articles will be useful to them in their practice. The funds for this work have been donated to the National Research Council by the Bureau of Social Hygiene, Inc.

ready availability, ease of administration and relatively certain and rapid action, it is almost indispensable. Here the likelihood of the manifestation of its one objectionable feature is reduced to a minimum. To those who went through the war as surgeons, particularly to those who worked nearest "the line," it almost seemed that military surgery would have been impossible without morphine. In cases of severe trauma the drug not only brings the necessary relief from suffering but, it shock intervenes constitutes one of the chief therapeutic weapons. In such conditions it is our belief that morphine should be given promptly in sufficient dosage to avoid frequent repetition. The healthy adult requires morphine, 0.015 Gm, subcutaneously.

THE OPERATIVE PERIOD

It is unnecessary to emphasize the desirability of establishing such an attitude in the patient that he approaches the operative ordeal whether it is under local or general anesthesia with a complete lack of apprehension. Although this is the result to be sought after needless to say it is not always obtained. However morphine lends itself to this purpose about as readily and satisfactorily as any drug that is available at present. Possibly in the future a satisfactory substitute will be devised. As a matter of fact some of the recently modified barbitol derivatives and tribrom-ethanol prove very satisfactory as a preliminary to anesthesia. Although definite progress has been made in this respect morphine, either alone or combined with other synergistic drugs, continues to be the most universally satisfactory type of preoperative medication. We desire, however, to emphasize our personal experience with tribrom-ethanol although this is not yet extensive. When this drug is used in doses of about 50 mg per kilogram, we have found that, except in cases of toxic goiter, the patient is brought to the operating room in a comfortable and almost sleepy condition. When this drug is followed by either procaine hydrochloride or nitrous oxide-oxygen anesthesia, a very satisfactory anesthesia results, although subject to the individual variation in response characteristic of all forms of alimentary medication. When larger amounts of tribrom-ethanol are employed and are supplemented by a general anesthetic, one occasionally finds that general anesthesia is sometimes induced with more difficulty because of the shallowness of the respiration. It would appear to be a particularly useful combination for patients with increased intracranial pressure for whom morphine is not only inadvisable but dangerous because of its depressant action on the already impaired medullary center. However, we recognize that one of the reputed untoward effects of tribrom-ethanol may be its action upon the respiratory center. We have found it useful for all intracranial procedures that can be carried out under local anesthesia including avulsion of the sensory root of the gasserian ganglion in cases of tic douloureux.

The matter of local anesthesia and the dangers of cocaine have been repeatedly discussed. One of us, who is a member of the Committee on Local Anesthesia of the American Medical Association, has unhappy recollections of the dangers that follow the use of cocaine. The studies¹ made by this committee have been concerned with the immediate mortality from

the use of this drug and not with the later misfortunes of addiction. It should be necessary only to repeat the conclusions of the committee that the injection of cocaine through a needle is, in the light of present knowledge concerning the effective substitutes for this drug, absolutely inexcusable. Unfortunately, science has not yet provided a substitute that will satisfactorily produce anesthesia when placed on the conjunctiva and mucous membrane, although in the former case holocaine is quite useful. Until such a drug is forthcoming ophthalmologists and otorhinolaryngologists must continue to use cocaine for producing anesthesia by application to surfaces. However such surgical specialists are not excused from the rule against injecting this drug and should know that the chief toll of life in recent years lies with those who inject cocaine for tonsillectomy.

After an operative ordeal it is of paramount importance to reduce the discomfort of the patient to a minimum, morphine should not be spared to accomplish this end, but it should not be employed indiscriminately. Frequently the patient's discomfort may be due to quite tangible conditions, such as position an unnecessarily tight dressing or urinary or intestinal distention these can be dealt with specifically rather than symptomatically by the injection of morphine, although to follow the former course necessarily involves slightly more effort on the part of those in attendance. In the first twenty-four to seventy-two hours following many major procedures the patient should receive sufficient morphine to keep him comfortable, provided an honest effort has been made to ascertain that his discomfort cannot be corrected by some simple remedial measure. Here again, no doubt, in certain instances, other sedatives may be substituted for morphine, but in general such substitutions, with the possible exception of codeine prove unsatisfactory. A further contraindication to large quantities of morphine after operation is that this drug might add a degree of atony to the intestines which might prove undesirable particularly if there was a preexisting tendency in this direction. However, one may with some justification construe distention to be an effort on the part of nature at immobilization of the bowels. This possibility may find its practical application in the Ochsner regimen advocated in the treatment of peritonitis, in which morphine almost assumes the role of a specific remedy. The adherents to this regimen are so numerous that one must conclude that the results have warranted their confidence in it. There are those who accept it as an excellent form of therapy but would modify it by returning morphine to the role of a symptomatic adjuvant, which would mean a marked diminution in the amount of morphine employed the therapeutic indication for its usage being the same as under any other circumstances. There can be no great objection to the use of morphine during a relatively brief postoperative period following which we are so optimistic as to believe that the patient will be relieved of his original complaint.

THE CARE OF PATIENTS WITH INTOLERABLE DISORDERS

Finally, we must consider the patient with an incurable and painful disorder. Many cases of cancer present this combination, long before death is imminent. Here again, as in trauma there can be no cavil with the use of morphine. Indeed, one can imagine that under these circumstances the fantasy, isolation and satisfac-

1. Mayer, Emil. The Toxic Effects Following the Use of Local Anesthetics. J. A. M. A. 52: 876 (March 15) 1923. An Analysis of the Reports of Fatalities Following the Use of Local Anesthetics with a Summary of Recent Studies on the Subject Including a Summary of Fourteen Additional Fatalities not Hitherto Recorded. Ann. Otol. Rhin. Laryng. 32: 404 (March) 1923.

tion of the morphine habit might be a just and desirable condition. Thus, when an incurable lesion becomes associated with great pain the patient can justly look to his physician for euthanasia. It is then the physician's responsibility not only to provide it but also to regulate it in order that the maximum relief over the greatest period of time may be obtained all of which requires no little cooperation between the patient and the physician. At the outset any one of a number of sedatives may prove somewhat useful, but ultimately in the majority of circumstances, morphine alone will meet the requirements, although there will be great individual variation. In certain instances rhizotomy or chordotomy may be employed very effectively for the alleviation of pain thus in some degree diminishing the necessity for the usage of large amounts of morphine.

One should also mention the other drugs heroin, codeine and ethylmorphine hydrochloride which have their devotees. Although ethylmorphine hydrochloride may have its uses in ophthalmology, we cannot as surgeons imagine conditions in which the prolonged use of these drugs, with the exception of codeine would be either justifiable or desirable. There are instances when codeine can be substituted for morphine quite effectively, and one should always consider this possibility, particularly in view of the almost complete absence in this drug of any tendency to the production of addiction. When administered by mouth it may be combined advantageously with some of the coal tar derivatives.

SUMMARY

Surgeons are concerned only with drug addiction due to cocaine and morphine. All the cases that we have seen, as well as much of the material published lead us to look on the "addict" as an individual with a perverted and degenerate personality, although obviously certain reservations must be made. Nevertheless our views are rather fatalistic about such personalities. Still it behooves surgeons to share in the general and desirable effort to keep habit forming drugs from such individuals. Cocaine needs no further comment. Its use is justified only in surface applications. As to morphine, we believe that from the standpoint of the surgeon it is the most valuable drug in the pharmacopeia, that it is essential in trauma and in certain very painful crises, that it should seldom be administered until a diagnosis can be made, and that in the preoperative and postoperative care of patients its use may be reduced by a proper study of substitutes.

Nephritis in Children.—Marriott stated that one of the most important and clearcut manifestations of infection in the nose and throat of children is tubular and glomerular nephritis. He also stated that nephritis is invariably associated with infection and most frequently with infection of the nose and throat. In practically all cases of nephrosis in children under his observation he found infection of the nasal sinuses particularly the antrums. *Staphylococcus hemolyticus* was found to be the most common infecting organism. He reported remarkable effects with treatment one patient losing 15 pounds (6.8 Kg.) of fluid following the drainage of an infected sinus. He has followed several cases for a number of years with no remaining evidence of nephrosis. In some cases however treatment brought about only temporary and symptomatic improvement because it was not always possible to eradicate the infection completely. He expressed the belief that infections of the nose and throat are likely to lead to permanent changes in the kidney and that the most to be expected is the prevention of further damage and progressive change. —Wimmer, S. D. The Relation of Sinusitis to Nephrosis in Children. *Irish Otol.* February 1931.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. LUCKEY, Secretary

IOPAX—Sodium 2-oxo-5-iodopyridine- λ -acetate—Sodium 5-iodo-2-pyridon- λ -acetate— $\text{CH}_3\text{O}^-\text{N}^+\text{CH}_2\text{COO}^-\text{Na}^+$. The sodium salt of a 2-oxo-5-iodopyridine- λ -acetic acid. Iopax contains from 42 to 43.5 per cent iodine.

Actions and Uses.—Iopax is proposed for use intravenously in radiographic visualization of the urinary tract. It is also used for injection into the renal pelvis through the ureteral catheter for pyelography. After injection the patient's face immediately becomes flushed and tachycardia and palpitation occur. Patients experience a feeling of general warmth, and in more than half of the cases they complain of pain in the arm near the shoulder which they describe as a feeling that the arm is bursting. There is usually considerable dryness of the throat and thirst but water is withheld in order that the drug may be secreted in concentrated form. These symptoms usually pass off within ten minutes. Occasionally nausea and vomiting take place and urticaria has been observed. Symptoms resembling acute iodism manifested by lacrimation, sneezing and dyspnea have occurred but such reactions have been transitory and delayed reactions have not been observed. After ten minutes from the onset of injection untoward symptoms have not developed.

Roentgenograms are taken from fifteen to twenty minutes after injection and again from thirty to forty minutes after the first roentgenogram. Before the second roentgenogram is taken the bladder is emptied in order that the shadow of the drug in the bladder will not obscure the lower parts of the ureters. If the first plates show that but little of the drug has been secreted it is presumed that the kidneys are functioning poorly and several hours should be allowed to elapse during which plates should be made at intervals. Impairment of renal function will allow but poor concentration of the drug in the bladder and practically none in the kidney; many hours are required for its secretion.

Dosage.—The maximum necessary dosage intravenously is 50 Gm. of the powder dissolved in 100 cc. of redistilled water for infants and children from 20 to 100 cc. according to age. The solution warmed to body heat is injected slowly into the cubital vein.

Manufactured by Schering-Kahlbaum A. C. Berlin, Germany (Schering Corporation New York distributor). U. S. patent applied for. N. C. trademark.

Iopax occurs as a lemon-yellow crystalline powder possessing a slight pungent odor and a characteristic taste very soluble in water. An aqueous solution is neutral to litmus.

Fuse about 0.2 Gm. of iopax with 2 Gm. of powdered sodium hydroxide; it decomposes with evolution of both iodine vapors and ammonia. Dissolve about 0.5 Gm. of iopax in 100 cc. of water add an excess of diluted hydrochloric acid; collect the resultant 2-oxo-5-iodopyridine- λ -acetic acid on a filter wash and dry in a partially exhausted desiccator; it melts at 230°C. to 1 cc. of the foregoing filtrate add 10 cc. of uranyl zinc acetate solution a yellow precipitate results. Transfer about 0.5 Gm. of iopax to a glass stoppered cylinder add 25 cc. of a diluted nitric acid; shake for five minutes; filter; the filtrate yields no distinct turbidity on the addition of 2 cc. silver nitrate solution (absence of inorganic halides). Dissolve about 0.5 Gm. of iopax in 50 cc. of water add 1 cc. of diluted hydrochloric acid; filter; separate portions of 10 cc. each of the filtrate add no turbidity on the addition of 1 cc. of barium chloride solution (sulphate); no coloration or precipitation on saturation with hydrous sulphide (salts of lead and metals).

Dissolve about 1 Gm. of iopax accurately weighed to constant weight at 100°C. the loss in weight does not exceed 1 per cent. Transfer about 0.5 Gm. of iopax accurately weighed to a 500 cc. Kjeldahl flask and determine the nitrogen content according to the official method in the Official and Tentative Methods of Analysis of the Association of Official Agricultural Chemists, second edition, page 48, the percentage of nitrogen corresponds to not less than 4.5 per cent nitrogen or than 4.8 per cent when calculated on the dried substance. Weigh accurately about 0.5 Gm. of iopax in a tared platinum dish add 10 cc. of dilute hydrochloric acid gently heat while fumes of chlorine and hydrochloric acid are evolved repeat using two portions of 2 cc. of dilute hydrochloric acid respectively ignite and weigh as sodium chloride; the weight found corresponds to the theoretical percentage of sodium chloride. For the purpose of calculation the dried substance contains 0.11 Gm. of iopax as a basis for determining the percentage of iopax. Carus method the amount of iodine found in the dried substance is 42 per cent of the theoretical amount.

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING
REPORTS

W. A. PUCKNER, Secretary

BOVININE AND NEOBOVININE NOT
ACCEPTABLE FOR N N R

Bovinine and Neobovinine are marketed by the Bovinine Company of New York and Chicago. In 1909 the Council reported that while Bovinine was advertised as a condensed beef juice prepared by a cold process, it was not meat juice but a mixture of alcohol glycerin added sodium chloride and apparently some form of defibrinated blood. The Council reported further that numerous misrepresentations appeared on the label and in the literature of Bovinine (*THE JOURNAL*, Nov. 20, 1909 p. 1745). In 1914 to determine whether the claims made for Bovinine had been revised to agree with the facts and also to determine whether certain criticisms of the previous report which had been made by the exploiters of Bovinine required a revision of its conclusions, a further examination of Bovinine was made by the Council (Reports Council on Pharmacy and Chemistry, 1914 p. 105). This examination demonstrated that the unwarranted and false claims previously objected to were for the greater part still made and also that the conclusions of the first report were fully warranted by the experimental evidence. The Council has not given consideration to the product since the report in 1914 was issued.

Attention having again been called to Bovinine through the advertising for a similar one, Neobovinine, which is marketed with it, a referee made an examination of the advertising with a view to determine whether either or both of the products remained open to the objections which the Council had previously published. The referee reported that for Bovinine the situation remained about the same as when the product was last considered. He found no reason for considering this preparation in any way acceptable. In the leaflet that advertises Bovinine and Neobovinine one encounters such unsupported statements as the following: "It will assist in making up for the wear and tear of metabolism without an excessive burden for absorption." "BOVININE (*Plan*) exerts a stimulatory action on general metabolism, causes a definite improvement in appetite and allows a higher caloric intake with a resulting effect on hemoglobin production." "BOVININE (*Plan*) is a preparation of fresh beef blood. It contains proteins complements and nutrients so necessary to general metabolism." "BOVININE (*Plan*) ranks high in alkaline reaction and is therefore a suitable all round food in acid conditions or peptic ulcer." "Clinical evidence comes to us that in Pernicious Anemia by combining BOVININE (*Plan*) with liver extract the results may be more rapid and the dosage of liver extract reduced."

Neobovinine 20 is stated to be "essentially BOVININE (*Plan*) in which is incorporated the active principle of fresh whole liver." Certainly the combination of Bovinine with a liver extract of undeclared character must be held an unscientific mixture. The case histories are entirely unsatisfactory and report conditions in which it is known that there could not possibly be the results reported, such as purpura hemorrhagica and myelogenous leukemia. The cases of pernicious anemia are not reported with sufficient data on which to base an opinion.

The Council reaffirmed the rejection of Bovinine and declared Neobovinine unacceptable because the information in regard to its composition is inadequate because the therapeutic claims advanced for it are unwarranted and because the combination of "Bovinine" with a liver extract of undeclared character is unscientific.

"SPIN-L-RON" NOT ACCEPTABLE
FOR N N R.

"Spin L-Ron" is the nondescriptive name under which the Ford Pharmacal Company markets capsules each stated to contain spinach dehydrated 5 grains, liver extract powder 2 grains and iron and ammonium citrate, 3 grains. It is stated that the spinach content of each capsule represents 100 grains of fresh herb and that the liver extract represents 40 grains of fresh liver. The method whereby the liver extract is prepared is not declared although it is known that the action of liver

extracts depends on the process by which they are prepared. The advertising argues for the use of this mixture on the premise that "SPINACH is recognized as the richest Iron and Vitamin bearer of all plants", that liver extract 'has demonstrated its value in building up the blood and supplying its necessary tone and color', that it is being used today by leading specialists and clinics in pernicious anemia and that iron and ammonium citrate is "the most valuable of Iron salts." No reason is advanced for the use of spinach in capsule form rather than taking a mouthful of cooked spinach at meal. Nothing is said about the fact that the therapeutic action of liver extract depends on the method of its preparation and that the efficacy of certain liver extracts in pernicious anemia has little bearing on the use of liver in other conditions. As for the claim that iron and ammonium citrate is the most valuable of iron salts in anemic conditions, this is without warrant other iron salts are equally efficient and acceptable. No reasons are advanced why these three substances should be administered in admixture. According to the advertising Spin L-Ron "will appeal to the pale anemic apprehensive patient, toning up the whole system, bringing back strength and healthy glow by producing the necessary blood ingredients and improving appetite and digestion." This is a suggestion to physicians to prescribe this complex mixture to "pale, anemic, apprehensive patients" rather than diagnose and intelligently treat a patient.

The Council declared Spin L-Ron unacceptable for New and Nonofficial Remedies because it is a complex unscientific mixture of indefinite composition which is marketed under a nondescriptive name and with unwarranted therapeutic claim.

THYMOPHYSIN NOT ACCEPTABLE
FOR N N R

Thymophysin is said to be a preparation of posterior pituitary and thymus is manufactured by Fritz-Pezoldt of Vienna and is marketed in this country by the American Bio-Chemical Laboratories Inc. of New York City. The product is recommended as a reliable and safe means of accelerating delivery obviating the use of forceps in 75 per cent of the cases in which it is used. It is said to be absolutely harmless to mother and child and it is claimed that no harmful effects to either have ever been observed by its use. The special claim for this preparation is that the contractions of the uterus which follow its use are rhythmic in character rather than maintained, as is said to be the case following the use of pituitary alone.

Pharmacologic studies of this preparation or of thymus and pituitary mixtures are few, but most of the recent literature of a clinical nature refers to the paper by Temesvary, which appeared in 1926. Reference to this paper shows however, that it is concerned almost exclusively with the action of thymus extract and that there are only two tracings which have any relation to the modification of pituitary action by thymus. A comparison of these two tracings shows that whether the contraction pictured is produced by pituitary alone or by pituitary plus thymus there is no essential difference between them. Similar slight differences are always to be found when successive doses of pituitary extract are given in the routine testing of the drug. This slender bit of so called evidence is the only pharmacologic study which appears to have been published to serve as a basis for the claims which are made for the product.

An extensive clinical literature has appeared since the date of Temesvary's paper, and in general these papers have reported favorable results from the use of the product. However, on account of the difficulties inherent in the situation such clinical reports cannot be accorded too great weight. It would be extremely difficult to distinguish slight degrees of differences in the length of the individual contractions of a uterus in labor. The drawing of such false deductions is well illustrated by those forming the basis of the recent popularity of watery extracts of ergot for hypodermic injection which investigations have shown to be lacking in the essential alkaloids of ergot. This made it necessary that Thymophysin be subjected to examination by accurate pharmacologic methods to see whether the claims made for it are justified or whether it might not be merely a weak pituitary extract which, because of the presence of this substance, could shorten labor but which also because of

its relative weakness, might be safer to mother and child than would pituitary extract alone as it is only too frequently given. Such a study, therefore, has been made by Prof. Erwin C. Nelson of the Department of Pharmacology of the University of Michigan. His paper appears in *THE JOURNAL*, January 31, page 352. After a critical survey of the literature, Nelson studies the action of Thymophysin itself in comparison with pituitary and again the action of thymus in connection with pituitary. Full details of these studies appear in the paper.

The conclusions drawn by Nelson in his excellent paper are that there is no unequivocal evidence that either oxytocic or pressor activities of pituitary are altered by the simultaneous administration of thymus that experimentally no difference could be found in the oxytocic or pressor activities of pituitary alone as compared with pituitary plus thymus (in comparisons of Thymophysin with equivalent doses of pituitary no differences could be demonstrated). Finally, accurate assay of Thymophysin showed that the ampules contained only about 30 per cent of the strength claimed on the label. The lack of complete harmlessness has already been shown by reports which are appearing from time to time in the literature reporting rupture of the uterus, tetanic contractions and cervical tears following its use. In view of these reports the Council declared Thymophysin unacceptable for inclusion in New and Nonofficial Remedies since it is an unscientific preparation marketed under false claims as to its essential action, as to its strength and as to its safety for mother and child.

COMMITTEE ON FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COMMITTEE ON FOODS OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMOTION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIC, Secretary

LAND O'LAKE'S SWEET CREAM BUTTER

Manufacturer—Land O'Lakes Creameries, Inc., Minneapolis.

Description—A packaged salted or unsalted butter graded by official federal-state butter graders as rating 93 score or higher.

Manufacture—The cream used in the manufacture of this butter the conditions equipment and process of manufacture and the final product must meet certain published standards and requirements adopted by the corporation.

Cream deliveries from tuberculin tested cows are received four times a week in summer and three times a week in winter. Accepted cream contains not more than 0.20 per cent acidity as lactic acid and is clean and sweet of flavor. No neutralizer is used. The cream is pasteurized by holding at 155-158 °F. for thirty minutes and immediately cooled to 40 °F. No starter is added either before or after churning of the salted butter. A churning report is made for each batch. The butter is tubbed and sent to the central plant for grading and packaging. Unsalted butter is made by the same procedure as salted butter, but with omission of the salt.

A strict control is exercised over the processes and sanitation of the various creameries. Yeast and mold counts of the butter batches are made at intervals.

Before packaging the butter is graded according to government standards by federal state butter graders appointed by the U. S. Department of Agriculture in cooperation with the Minnesota State Department of Agriculture. The reports on each creamery batch include acidity of the cream before churning, the temperature of processing, composition of the butter, the method of manufacture and yeast and mold counts. The butter is scored on the basis of:

- 45 points on flavor
- 25 points on body
- 15 points on color
- 10 points on salt
- 5 points on package

A 'certificate of quality' issued by authority of the U. S. Department of Agriculture and declaring the score is placed

in each package. The Land O'Lakes Sweet Cream Butter scores 93 or higher."

Chemical Composition—

(proximate analysis)		Per Cent
Salt butter		
Moisture		15.8
Milk fat		80.7
Curd		1.0
Salt		2.5
Unsalted butter		
Moisture		16.0
Milk fat		83.0
Curd		1.0

Calories—

730	per gram
2073	per ounce
3317	per pound

Claims of Manufacturer—A delicious pasteurized sweet cream butter scoring 93 or better by butter graders of the U. S. Department of Agriculture and Minnesota Department of Agriculture. It is made from sweet cream and therefore has a different flavor from that of butter made of sour cream. This butter, always uniform, is one of the finest of butters.

KNOX PLAIN SPARKLING GELATINE (No. 1)

Manufacturer—Charles B. Knox Gelatine Company, Inc., Johnstown, N. Y.

Description—An unflavored unsweetened granular gelatin.

Manufacture—The mineral matter of crushed bones is extracted with dilute hydrochloric acid. The remaining organic matter is washed with water. Osseomucoids and other protein impurities are removed by treatment with suspensions of calcium hydroxide. Five fresh baths are employed in the course of from thirty six to forty days. The resultant collagen is washed with water until approximately free from soluble calcium compounds. It is adjusted to a pH of 6.5 with phosphoric acid and is pumped to cooking pans.

The collagen is converted to gelatin in the pans by hydrolysis with water at from 150 to 170 °F. The first extraction is made at 150 °F. and the third (final) at 170 °F. The gelatin solutions are filtered, concentrated under partial vacuum to from 13 to 15 per cent concentration, filtered, cooled, set to sheets of stiff jelly, placed on nickel drying frames, dried by warm filtered air in long chambers and ground to pass a 20 mesh screen. The granulated gelatin is packed in envelopes in cartons.

Knox gelatin is not chemically bleached nor does it contain preservatives. Strict sanitary control is exercised in the manufacture. The product is machine handled only. The plant equipment is largely aluminum, nickel or stainless steel. Control laboratories assure a uniform product.

Chemical Composition—

(proximate analysis)		
Moisture		13.0-14.0%
Ash		1.0-1.2%
Protein (N x 5.55)		85.0-86.0%
Fat (ether extract)		0.1%
Carbohydrates		0.0%
Arsenic as As ₂ O ₃	0.6 part	per million
Lead as Pb	0.0 part	per million
Copper as Cu	2.5 parts	per million
Antimony as Sb	0.0 part	per million
Zinc as Zn	0.0 part	per million
Sulphur dioxide	0.0 part	per million

Calories—

345	per gram
980	per ounce
1568	per pound

Claims of Manufacturer—Knox Sparkling Gelatine is always of high quality. It can be used in a wide variety of delicious desserts, candies, salads and other recipes and makes fruit and vegetables taste better and go further.

This gelatin contains no added sugar or flavoring and consequently is valuable for many special diets. It is one of the most readily digested proteins.

KNOX SPARKLING GELATINE (No. 3)

Manufacturer—Charles B. Knox Gelatine Company, Inc., Johnstown, N. Y.

Description—This product is essentially the same as the Knox Plain Sparkling Gelatine No. 1. Each carton contains two envelopes of Knox Plain Gelatine and one envelope of fruit acid (citric acid). The citric acid is intended for admixture with the gelatin in various recipe preparations if so desired.

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SATURDAY MARCH 14 1931

THE CONTROL OF NARCOTIC ADDICTION

Narcotic addiction one of the most sensational subjects that engages medical and social thought is again the focus of an extraordinary amount of attention directed from various points of view for diverse reasons. Through the efforts of numerous leagues for combating narcotic addiction meetings are being held, accompanied by much newspaper publicity and planned apparently to urge restrictions on the manufacture of narcotics and on their prescription sale and importation. Special committees appointed in various cities and states are urging the establishment of farms and homes for drug addicts; they support their contentions that these will solve the problem by more or less scientific surveys and data. Several bureaus of the United States government including the Division of Mental Hygiene in the United States Public Health Service are making available the results of their investigations. The Wickersham committee, having brought forth what it brought forth about alcohol is now in labor on drug addiction and crime. The National Research Council, as emphasized in an editorial elsewhere¹ in this issue is stimulating research, leading possibly to the development of a narcotic that will have the potency of morphine without its propensity of inducing addiction. The Hearst press publishes editorials calling on the medical profession "to drive out the dope doctors" and stimulates the sale of newspapers by the syndication of the autobiography of a motion picture actress whose addiction and associated difficulties have been the subject of newspaper comment for several years. Such a mass attack must inevitably yield an appreciable result.

Several phases of the attempt to solve the problem of narcotic addiction are reflected in this issue of THE JOURNAL. The articles by Light² and by Lambert³ make available the results of studies carried on in the

narcotic wards of the Philadelphia General Hospital and of investigations by the Mayor's Committee on Drug Addiction in New York City. In these reports, many points of significance are emphasized. The taking of narcotics is usually an attempt on the part of someone with little will power to achieve a state of euphoria or artificial happiness. Once 'hooked' by the drug the addict finds withdrawal accompanied by exceedingly unpleasant symptoms. He tends to succumb again to his addiction through inability to withstand the thought of withdrawal or through repetition of the psychological situation that led to addiction. The significant point emphasized by Light and his associates is their belief that addicts will and can control to a large degree the intensity of their withdrawal symptoms and the opinion that such symptoms are so frequently complicated by nervous manifestations of the nature of hysteria that the control of narcotic addiction demands both psychiatric and psychological investigations of the persons affected. The work carried on in New York fully supports the Philadelphia results and adds thereto exceedingly interesting observations relative to the therapeutics of the withdrawal stage. Apparently it is possible for an experienced physician to carry an addict through the withdrawal period with relatively little distress provided the addict is under controllable conditions.

Another important feature of the current issue is the beginning of a series of articles concerned with 'The Indispensable Uses of Narcotics.' Described by Sir William Osler as 'God's own medicine,' the importance of narcotic preparations should not be underestimated. Nevertheless there exist in medicine innumerable occasions when one or more of the vast armamentarium of non-habit-forming sedatives, narcotics, hypnotics and analgesics singly or in combination may be employed to substitute for an opium derivative. It is the purpose of this series of articles to indicate to the medical profession the relatively few instances demanding the administration of opium or cocaine derivatives and the many substitutes therefor that may be available. Something under 25 per cent of narcotic addiction, it is estimated results from the beginning of the habit through previous use of drugs in medical treatment. This is after all only an estimate based largely on evidence derived from the addicts themselves, who are notoriously an unsafe source of evidence. Nevertheless the physician must strive to limit his prescribing of narcotics absolutely to those situations in which the narcotic may be considered indispensable. Thus he will avoid the possibility of unfavorable criticism.

Figures assembled by the League of Nations and by many other authorities indicate that the medical use of narcotics in the United States far surpasses that of

¹ Research for a Non-Habit-Forming Substitute for Morphine this issue p. 863.

² Light A. B. Physiologic Aspects of Opium Addiction this issue p. 823.

³ Lambert Alexander. Treatment of Drug Addiction this issue p. 825.

⁴ Fishbein Morris. The Indispensable Uses of Narcotics this issue p. 856. Cutler E. C. and Holloway J. W. The Indispensable Uses of Narcotics in Surgery this issue p. 857.

any other nation. The suggestion has been made in extenuation that the speed of modern life in this country is responsible and that the nervous system of the American is somewhat more sensitive than that of the inhabitant of other countries. However, others have insisted that the American physician is too easily inclined to the prescribing of narcotic drugs. Regardless of the validity of the evidence in support of these contentions, it is reasonable to ask that physicians attempt to restrict their prescribing of narcotics. Such restriction may help to determine whether or not the need which creates this large discrepancy in American prescribing is compared with that abroad is an actual or indispensable need.

The assertion has been made by the sensationalists that a great proportion of physicians are drug addicts as compared with the rest of the population. They shriek that a considerable number of physicians are consciously engaged in the creation of addiction for personal gain, hence the call by the Hearst press to drive out the dope doctor. THE JOURNAL states confidently that no county medical society, no state medical society, nor the American Medical Association will retain in its membership any physician who is convicted of such utterly unethical action. These officially organized bodies need no call from Mr. Hearst to drive out the dope doctor. The removal of licensure or of the right to practice medicine is not the prerogative of the American Medical Association but distinctly within the purview of the state medical licensing boards. The trial and conviction of such miscreants is the duty of the regularly established investigating, prosecuting and judiciary bodies of this country. They may be assured of all the help that the American Medical Association can render in purging the medical profession of those who have any conscious part in the creation and maintenance of narcotic addiction. Their activities reflect unfavorably on a profession of high standing and it will not tolerate them in its midst.

In the preparation of the series of articles that begins in this issue of THE JOURNAL many official agencies have cooperated. The list of authors includes men chosen for their competence in the fields of which they write. The articles are published under the auspices of the Committee on Drug Addiction of the Division of Medical Science of the National Research Council, the Division of Mental Hygiene of the United States Public Health Service, the American Medical Association and the Bureau of Social Hygiene, Inc. After the articles were prepared they were submitted to members of the Council on Pharmacy and Chemistry of the American Medical Association and to representatives of the various cooperating agencies for editing and revision. When completed these articles will be available in book form for permanent reference by physicians who wish to cooperate in the praiseworthy effort to limit prescribing of narcotics to indispensable uses.

RESEARCH FOR A NON-HABIT-FORMING SUBSTITUTE FOR MORPHINE

The popularity of endocrine, vitamin and diverse synthetic medicinal products in recent years has tended to obscure the significance of active constituents derived from the plant kingdom. The greater number of dependable and useful substances of natural origin in the therapeutic armamentarium may be forgotten because of the emphasis placed on synthetic products offered by the chemical industry. If it had not been for leads obtained from natural products the synthetic therapeutic products might not have come into existence. Frequently the standard by which the usefulness of a synthetic product is determined depends on a natural product. For instance, the activity and suitability of synthetic products intended for local anesthesia is determined by comparison with cocaine, the alkaloid of coca leaves, a natural local anesthetic, which with its derivatives is not yet surpassed in general usefulness and efficiency by any synthetic product.

The subordination of interest in natural products is the outcome of recognized commercial possibilities of synthetic products rather than a limitation of opportunities for achievement along fundamental and practical lines. The sterility that has possessed this field is to be deplored. Today, exceedingly few chemists and pharmacists concern themselves with the isolation and analysis of medicinal plant constituents. Some manufacturers prepare and market the few constituents that appear indispensable but generally industry is indifferent to the investigation of new possibilities. Examples of rewarded efforts are nevertheless at hand. For instance, hardly any one would deny that the additional though belated efforts were not well spent on two of the oldest alkaloids, ephedrine and quinine, which have achieved prominence and value. A better understanding of cardiac therapy could scarcely have been achieved without the persistent studies of the natural glucosides of digitalis by Cloetta of Zurich and a few others, notably Jacobs of the Rockefeller Institute in this country. Nothing is more essential than pure and definite constituents for satisfactory pharmacologic and therapeutic studies. But if the desirability of work in this line should be doubted, one need only reflect on the chaotic state of knowledge of the actions of opium for some hundreds of years until the isolation of its chief active constituent, morphine, by the pharmacist Serturner in 1803. The effect of this signal achievement for progress in therapeutics is written in the scientific records on a whole series of alkaloids discovered since that time.

Although the active constituents of many important medicinal plants are known, there is still plenty of room and opportunity for effective and creative work. The chemistry of most of the most important constituents remains unsettled, notable among these being morphine. The chemical structure and synthesis of this indis-

insoluble alkaloid still remain in doubt. Therefore it is news of more than usual interest that the Committee on Drug Addiction of the National Research Council¹ announces a large collaborative research in alkaloidal chemistry by chemists and pharmacologists of this country. Apparently the present object of the committee is to prepare a non-habit-forming substitute for morphine that would yet possess the desirable actions of morphine. The ideal molecule, apparently some hybrid molecule, is to be built up out of the desirable features of the morphine and codeine molecules. The experiment will be watched with much interest from many sides. If it merely stimulates interest and work in the chemistry of alkaloids and other natural medicinal constituents, the effort will have been well repaid. Thorough investigation of the natural products is likely to prove more instructive and important for a selected materia medica than the multiplication of synthetics, which in many instances represent minor modifications of a single product.

BOTULISM AND DUCKS

Kalmbach,² ornithologist of the Biological Survey of the United States Department of Agriculture, assigned to the problem of the so-called western duck sickness, recently made observations that open a wide field for further study of botulism in birds, particularly ducks. Western duck sickness has affected migratory water fowl in marsh lands of western states. Shore birds, geese and ducks, especially of the pintail, mallard and teal species, are subject to the malady. Foci of the disease have been noted in the Bear River marshes and neighborhood in Utah, the Tulare Lake and Buena Vista Lake districts in California, Lake Malheur in Oregon, and other areas in Idaho, Texas, Dakota and Canada. Though a relatively small percentage of birds in an area are affected, it has been estimated that, up to 1927, fifteen million ducks had died.

The disease ordinarily occurs during the hot and dry weather of the summer and fall and is associated with low water, decomposing vegetation and high salt concentration. Although it usually occurs annually, increased severity obtains in some years. Finally, there is a decided cessation of the disease when heavy rains occur or even a lowering of the temperature without rain. In fact, recovery occurs after two to four days in from 70 to 90 per cent of the affected birds, provided fresh water and food are supplied.

Heretofore, the popular theory has been that alkaline waters are the causative agent. Shaw,³ in a series of experiments, indicated that salt mixtures, particularly those containing nitrates, especially with nitrites, produced symptoms closely resembling those observed in the animals in the field. Moreover, postmortem appear-

ances are similar. In fact, this author reported that a nitrate soil extract of high toxicity of which 100 cc. of water extract was fed over a seven day period caused death. This observation may be of importance in the light of the recent evidence submitted. Kalmbach, however, used body tissue, particularly blood and liver, of animal dead of the disease. After incubation at 85 F for five or more days this was fed to normal animals in amount of 0.5 Gm. Death with symptoms resembling the disease ensued, while from 0.1 to 0.05 Gm allowed recovery. Of great interest was the observation that boiling for five minutes at an altitude of 4,137 feet destroyed the toxic material but that an extract of a toxic liver, filtered and injected into the abdominal cavity, produced typical results.

Apparently the results of Giltner and Couch,⁴ who isolated *Bacillus botulinus*, type C, from the mud of one area of duck sickness, indicate that western duck sickness may be botulism. This view is further strengthened by the independent studies of Hobmaier from the Hooper Foundation of the University of California.

Epidemiologically, several theoretical assumptions arise. Botulism, whether in birds or in man, is regarded as a true intoxication. The experimental data as to infection from the spore of *Bacillus botulinus*, a widely distributed soil organism, deserve more than passing notice from epidemiologists despite the fact that the preponderance of evidence indicates that human cases of botulism are caused by consuming food in which the toxin has been preformed. Before the hypothesis that duck sickness is botulism is accepted as proved, toxin of a suitable type must be demonstrated in the mud or the feed, or the infectivity of type C botulinus isolated from the mud must be experimentally proved. There is no doubt that *B. botulinus* grows best and produces a toxin of maximum potency in liver mediums. The feeding experiments with incubated liver of dead animals may be explained by contamination or incidental appearance in the liver of a soil anaerobe. Geiger,⁵ years ago, demonstrated that a toxin could be produced in "cased" home-made sausages, when contaminated under actual field conditions of preparation, but only on incubation at 37 C for seventy-two hours. The temperature growth curve of *B. botulinus* may well be within prevailing weather conditions, assisted by decomposing organic matter, its oxygen requirements may be met by the symbiotic interaction of aerobes and anaerobes. Furthermore, these duck areas must be heavily contaminated with fecal material and it is not unusual to isolate *B. botulinus* from such soils. Theiler and his associates⁶ reported the isolation of a botulinus-like organism from the toxic carrion

1 White, W. C. Committee on Drug Addiction of the National Research Council. *Science* 73: 97 (Jan. 23) 1931.

2 Kalmbach, E. R. *Science* 72: 658 (Dec. 26) 1930.

3 Shaw, J. *Am. Vet. M. A.* 77: 561 (Nov.) 1930.

4 Giltner, L. T. and Couch, J. F. *Science* 72: 660 (Dec. 26) 1930.

5 Hobmaier, M. *Proc. Soc. Exper. Biol. Med.* 28: 339 (Dec.) 1930.

6 Geiger, J. C. and Stricker, F. D. *Pub. Health Rep.* 30: 63 (April 4) 1924.

7 Theiler, A. J. *Dept. Agric. Union of South Africa* 1920. Eleventh and Twelfth Reports of the Director of Veterinary Education and Research. *Dept. Agric. Union of South Africa* pt. 2 1927, p. 1201.

Theiler, A. and Robinson, E. R. *Ztschr. f. Infektionskr. par. Krank. u. Hyg. d. Haustiere* 31: 165 1927.

material that produced lamziekte, a fatal disease in cattle in Bichuanaland, Orange Free State, and in the northwest portion of Cape Province. According to Meyer and Gunnison, this organism resembled *B. botulinus*, type C, but only culturally, toxicologically it was a different and distinct type.⁸

Presumably, animal botulism may have respective types that are specifically toxic within certain limits and these may differ in different countries. What their relationship is to the disease as in these observations is at present obscure. We must, perforce, recall the report of the California Botulism Commission⁹ and perhaps remain in accord with its epidemiologic conclusion, that it must be shown that the preformed toxin and not merely the bacillus was present in the suspected food or the tissues of the diseased animals.

OXIDATIVE NATURE OF NERVOUS IMPULSE

A nerve deprived of oxygen rapidly loses its power to conduct the nervous impulse but soon regains it if oxygen is again supplied. It has been proved also that a nerve uses oxygen and gives off carbon dioxide during the passage of the nervous impulse and that this reaction liberates heat, which has been measured. Yet this does not prove necessarily that conduction of the nervous impulse is of an oxidative character, as waste products may be formed by the conduction, and these inhibit the process unless they are removed by oxygen.

After a nerve has been placed in an atmosphere of pure nitrogen, and oxygen is again admitted to the nerve chamber, there is an increased consumption of oxygen over the normal resting level, the increase being greater if the nerve is stimulated to activity during its stay in nitrogen. This demonstrates that a nerve is able to go into oxygen debt in the absence of oxygen, the debt being paid off when there is a supply of oxygen available. Under similar conditions, Schmitt¹⁰ has shown that extra carbon dioxide is not given off when a nerve is stimulated in nitrogen. Hence he assumed that conduction under anaerobic conditions may depend on the union of oxygen with some substance in the nerve, not necessarily a complete oxidation when the substance is oxidized to carbon dioxide. The only way that the nerve could obtain oxygen under anaerobic conditions would be from a molecule containing oxygen that was able to give up this oxygen readily when needed and later take up oxygen when it is again supplied to the nerve.

For several years Warburg¹¹ has been studying the iron-containing respiratory ferments in tissues having

the property of taking up molecular oxygen and of converting the oxygen into an active form that can be readily used by the tissues. Warburg has found that this reaction can be inhibited by carbon monoxide and he believes that the carbon monoxide combines with the respiratory ferment in a manner similar to the combination of carbon monoxide with hemoglobin. If a tissue is placed in an atmosphere of carbon monoxide and oxygen, the respiratory ferment will combine with these gases in proportion to their partial pressures, so that, if the amount of carbon monoxide is increased and the oxygen decreased, practically all the respiratory ferment will combine with the carbon monoxide. Under these conditions, respiration will cease as the supply of oxygen activated by the ferment decreases.

Haldane showed that the ratio of hemoglobin combined with carbon monoxide to hemoglobin combined with oxygen can be altered by the action of light, which has the property of splitting up the carbon monoxide-hemoglobin compound into carbon monoxide and hemoglobin thus diminishing this compound and increasing the amount of hemoglobin available for combination with oxygen. A similar reaction occurs with Warburg's respiratory ferment. Respiration of isolated cells may be decreased if carbon monoxide is added to the gases in the cell chamber in the dark, the carbon monoxide combines with the respiratory ferment. This inhibition of respiration will disappear when light is thrown on the cell suspension. Light causes the carbon monoxide combined with respiratory ferment to be replaced by oxygen and respiration may proceed as the ferment again activates oxygen.

A similar mechanism of oxidation takes place in the nerve. Schmitt¹² tested the effect of mixtures of carbon monoxide and oxygen on resting nerves and found that respiration is decreased in carbon monoxide in the dark but that, if the nerve chamber is illuminated, the usage of oxygen will be increased, similar to the change in respiration found by Warburg on cell suspensions. To corroborate this observation, Schmitt studied the effect of mixtures of carbon monoxide and oxygen on the action potentials of nerves. He found that the intensity of the action potential of a nerve can be reduced to zero in a mixture of carbon monoxide and oxygen and in darkness but that if light is thrown on the nerve the action potentials will be restored to normal. If the nerve is placed in nitrogen and in darkness, the action potentials can be reduced to zero but cannot be restored by the action of light thus showing that light has a specific effect on the respiratory ferment and not a general effect on the nerve.

From these experiments Schmitt concludes that the action potentials in the nerve are primarily of an oxidative nature and that the oxygen used in the process requires activation by the respiratory ferment which

⁸ Meyer, K. F. and Gunnison, J. B. South African Cultures of *Clostridium Botulinum* and *Parabotulinum*. XXXIII. With a Description of *C. Botulinum* Type D. N. Sp. J. Infect. Dis. 45: 100 (Aug.) 1929.

⁹ Public Health Bull. 127, September 1922.
¹⁰ Schmitt, F. O. Caswechsel des Nerven während und nach der Anaerobiose. Biochem. Ztschr. 213: 443, 1929.

¹¹ Warburg, Otto. The Chemical Constitution of Respiratory Ferment. Science 68: 437 (Nov. 9) 1926.

¹² Schmitt, F. O. On the Oxidative Nature of the Nerve Impulse. I. The Effect of Carbon Monoxide on the Isolated Nerve. Arch. Exp. Path. 1: 115, 1925.

may be poisoned by carbon monoxide. It would seem plausible that the ferment simply provides the source of activated oxygen.

These experiments are interesting for the new clues which they provide with regard to the actual mechanisms that are involved in nerve conduction. They show, furthermore, a correlation between the oxidative processes in various types of cells.

Current Comment

AUTOMATIC ENVIRONMENTAL VACCINATION

Native proteins are generally described as nondialyzable. This definition is so firmly established in biochemistry that the mere demonstration of dialyzability is accepted as proof of nonprotein nature. The gastro-intestinal mucosa is a colloidal membrane. It follows, therefore, that an undigested native protein cannot normally pass from the gastro-intestinal contents into the blood stream, any observed passage being proof of local abrasions or destructive lesions. These conclusions are firmly entrenched in the theory and nomenclature of physiology and clinical medicine and have given rise to numerous puzzling paradoxes, particularly in the field of infectious diseases and immunity. Yet both conclusions are erroneous, if one is to credit the experimental evidence currently reported by Dr. A. F. Coca¹ of Cornell Medical College, New York, who for the first time has studied protein dialyzability by modern serologic techniques. Coca tested the dialyzability of egg white and of each individual egg protein, using carefully selected, pressure tested fish bladders, collodion sacs and parchment shells. The dialysates were first concentrated from 500 to 1,000 times by the electric fan, then titrated with specific rabbit precipitins, and tested for antigenic and allergic properties in guinea-pigs. Briefly, Coca reports that by the end of five days approximately 1 per cent of each individual egg protein had passed through his dialyzing membranes, an average hourly rate of about 1 part in 12,000, the area of the membrane not being given. This is equivalent to approximately 1 mg. of egg protein absorbed into the circulation by the end of the first fifteen minutes after swallowing a raw egg, assuming, of course, no increase in absorption surface and an identical permeability. The amount absorbed may well be a hundred times greater than this, because of the relatively huge gastro-intestinal surface. Apparently one must conclude from the Coca dialyzation coefficient that undigested food proteins are normally absorbed unchanged from the gastro-intestinal tract, with an ever increasing absorption at each stage of protein cleavage. This absorption may conceivably serve the useful purpose of constantly maintaining the human body in a state of immunization against habitual protein diets without which automatic environmental vaccination the first destructive lesion of the gastro-intestinal tract might be followed by explosive protein toxicity.

¹ Coca, A. F. On the Dialyzability of Proteins. *J. Immunol.* 19: 405 (Oct.) 1930.

Association News

THE PHILADELPHIA SESSION

Clinical Lectures at Philadelphia

The program of clinical lectures presented herewith has been arranged by the Council on Scientific Assembly and will be given on Monday, June 8 and on Tuesday, June 9 at the annual session to be held in Philadelphia. The clinical lectures at the last several annual sessions constituted a distinct feature of each scientific program and in most instances have been splendidly attended. The topics to be discussed are of important, practical value to practicing physicians and the speakers selected by the Council are men of wide experience who have given serious study to the subjects they will discuss.

The Clinical Lecture Program will be given in the Irvine Auditorium of the University of Pennsylvania, which is only a short distance from the Municipal Auditorium where the Registration Bureau and all of the Association exhibits will be installed. Monday morning will be left free for registration so that no one will need to miss the clinical lectures that will begin at 2 p. m.

MONDAY AFTERNOON, JUNE 8

Blood Pictures in Anemias, Leukemias and Allied Disorders of Blood. CARLS C. STURGIS, Ann Arbor, Mich.
Treatment of Anemias. GEORGE R. MINOT, Boston.
Clinical Value of Blood Chemistry Determinations. ROBERT T. WOODWARD, Chicago.

TUESDAY MORNING, JUNE 9

Fungus Diseases. CHARLES MARIORY WILLIAMS, New York.
Variations in Methods of Treatment of Syphilis. PAUL A. OLFAND, Rochester, Minn.
Deficiency Disease. Clinical Recognition and Management. JOHN H. MUSSEL, New Orleans.

TUESDAY AFTERNOON, JUNE 9

Differential Diagnosis of Coma. HOWARD C. VERFZIGER, San Francisco.
Surgical Handling of Diabetic Patients. L. S. MCKITTICK, Boston.
Types and Treatment of Chronic Rheumatism. RUSSELL L. HADEN, Cleveland.

Scientific Exhibit Special Exhibit on Fractures Under Direction of Cooperative Committee on Fractures

The Cooperative Committee on Fractures, appointed by the Section on Surgery, General and Abdominal and the Section on Orthopedic Surgery, has been requested by the Committee on Scientific Exhibit to continue the exhibit for the Philadelphia Session. The Cooperative Committee on Fractures has acceded to this request.

Those who compose the committee are as heretofore: Drs. Nathaniel Allison, Chicago; William Darrach, New York; and Kellogg Speed, Chicago. This committee announces as members of its Advisory Committee: Drs. W. S. Bier, Wallace Cole, F. J. Cotton, R. B. Dillehunt, E. L. Elason, George W. Hawley, M. S. Henderson, James M. Hitzrot, W. L. Keller, Frank R. Ober, D. B. Phenuster, Emmet Rixford, Charles L. Scudder and William O'Neill Sherman.

The plans of the committee for the Philadelphia Session comprise:

1. Plaster of Paris
2. Emergency treatment of fractures of the lower extremity
3. Compression fracture of the spine
4. Fracture of the radius—lower end
5. Active movements and massage in treatment of fractures

Demonstrations will be given in separate booths with human models. Demonstrators will be on duty from 9 a. m. to 5 p. m. continuously. Demonstrations will run concurrently and criticisms and questions will be answered in the booths.

The committee has arranged for the services of about one hundred physicians, who will aid in the continuous demonstrations. The names of the demonstrators will appear in the Philadelphia Number of THE JOURNAL.

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts at 10 a m on Monday, 10 45 on Tuesday, 9 15 on Thursday and 10 30 on Saturday over Station WBBM (770 kilocycles, or 389 4 meters).

The program for the week is as follows:

March 16 Dust
March 17 Anemia
March 19 Pottacosis
March 21 International Sanitary Relations

Five minute health talks may be heard over the Columbia Broadcasting System daily except Sundays and holidays, from 12 to 12 05 p m, Central Standard Time.

The program for the week is as follows:

March 16 Underweight
March 17 Cheerfulness
March 18 The Great Composer — Sleep
March 19 Safe to Be Sick in a Hospital
March 20 The Health Item in Your Budget
March 21 Indicators of Medical Progress

CONTRIBUTIONS FOR MEDICAL SALON IN PERSHING HALL

The sum contributed this week for the Pershing Memorial in Paris brings the total to \$2,151 60. A list of those who have contributed during the current week follows:

A B Bruner M D Cleveland	George J Righter M D Alta
Fenwick Beelman M D New York	mont V Y
J D Worrell M D Monmouth	C C Massey M D Smithfield
Ill	N C
M Milton Eckert M D New York	J B Bostick M D Omaha
Harry A Steckel M D Syracuse	U S Kann M D Binghamton
N Y	N Y
C W Eberbach M D Milwaukee	Robert H Halsey M D New York
P F Peterson M D Butte Mont	

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARIZONA

Bill Introduced—H 239 to amend the nursing practice act proposes to provide for the issuance of licenses without examination, to all nurses who served for at least ninety days in the practice of their profession in the Army, Navy or Marine Corps during the World War.

CALIFORNIA

University of Southern California School of Medicine Not Approved—When this medical school was first opened the dean was enabled to secure a corps of well qualified teachers under the belief that other needed improvements would be made. For that reason at a business meeting of the Council on Medical Education and Hospitals of the American Medical Association held in June 1930 the Council voted that an acceptable rating be granted for the students who had completed their first two years of medical work during the years 1928-1929 and 1929-1930 under the faculty thus secured but that an acceptable rating for the medical school be withheld in the hope that further improvements deemed essential would be made. Recent information obtained from reliable sources however indicated that instead of making further improvements actually retrogressive measures had been adopted. At a business meeting of the Council held February 15 therefore the Council had no other alternative than to vote that an acceptable status for this medical school be not granted.

Society News—Dr Joseph R Shuman addressed the Los Angeles Obstetrical Society February 10 on "End Results in Children Born with Intracranial Injuries." —Dr August H

Rosburg addressed the San Francisco County Medical Society February 10 on "Bacteriophage." Harry E Alderson "Bacteriophage in Dermatology" and Edwin W Schultz, "Discussion of Experimental Results on Bacteriophage." —Dr H Gideon Wells Chicago, delivered the third annual series of medical lectures under the Colver Lectureship at the College of Medical Evangelists, Los Angeles, February 17-19 on the general subject "Nature and Cause of Cancer." —Dr Jules Duesberg rector and professor of anatomy University of Liege Belgium addressed the faculty and students of the University of California Medical School San Francisco February 24 on "How Belgium Is Trying to Develop Research." —Dr Lyell C Kinney addressed a joint meeting of the Imperial Valley and San Diego County medical societies El Centro February 14 on "Surgical Radiology." —Dr Everts A Graham St Louis delivered three lectures before the San Diego Academy of Medicine, March 3-5 on "The Empyema Question," "Pulmonary Suppuration and How Shall We Estimate and Improve the Operative Risk in Patients with Disease of the Biliary Tract." —The Irueder Society was addressed February 24 by John S Broadway professor of law and director of the legal and clinic University of Southern California Law School on "What Is Wrong with the Professions" and Dr Carl R Howson Los Angeles "The Future of Medicine." —Dr William J Kerr, San Francisco, addressed the Portland Academy of Medicine Portland, Ore, February 12 and the King County Medical Society February 9 at Seattle on "Recent Experimental Studies on the Peripheral Circulation with Special Reference to Raynaud's Disease."

CONNECTICUT

Diphtheria Decreases in New Haven—There was not a child's death reported from diphtheria in New Haven during 1930. Only fourteen cases occurred in a population of 162,655 which is about a 50 per cent reduction from the best previous record. One adult death was reported.

Department of Student Health at Yale—A new four story building erected at Yale University at an approximate cost of \$500,000 to house the Department of University Health was recently opened. The building of Indiana limestone is situated



ated on the southern extension of the Cross Axis. The first floor contains clerical offices and a suite of three rooms for women students. In the basement are x-ray equipment, three orthopedic offices, two physical therapy rooms, an isolation and a sterilizing room. The second floor is arranged to care for sick or injured ambulatory patients. Seven offices, three medical, two surgical, one for diseases of the eye and one for diseases of the ear, nose and throat are also on this floor. A total of 27,710 visits was made to this clinic service in 1929-1930. Examination suites, clinical laboratory and the sanitary inspector's office are on the third floor. The fourth floor contains two follow-up rooms, a large staff room, a residents' suite and the director's office. The university health department was organized in 1916 to promote the general health and physical fitness of students, to encourage habits of rational exercise and healthy living and to insure sanitary environment. A medical examination by the staff is required of each student at least once a year. The medical service not only takes care of communicable diseases and other illnesses but extends its supervision to mental hygiene, nutrition of underweight and overweight

students orthopedic corrections and the use of physical therapy. During the last year an effort was made to improve the mental hygiene technique used in the survey of new students. This service since its inauguration in 1927, has almost doubled, the number of students treated in that year being 470 and in 1930, 851. Emergency patrol stations were recently established near the dormitories, each one having a telephone and attendant on duty during the hours that the department offices are closed, permitting prompt communication with physicians on duty.

ILLINOIS

Bill Introduced—H 310 proposes to provide that in case of death occurring without medical attendance, it shall be the duty of the undertaker to notify the coroner of the death and that the coroner shall then make an investigation as to the cause of death.

License Restored—The state department of registration and education restored January 20 the license to practice medicine of Dr Elmer L Apple Albion. The license was revoked, Dec 20 1930 after Dr Apple was convicted of violation of the Harrison Narcotic Act.

Chicago

P A Kechek Goes to Jail—The Department of Registration and Education of Illinois issued a warrant February 3 against P A Kechek who was posing as a physician in Chicago, February 7. Kechek was arraigned in the municipal court and asked for a jury trial. On failure to produce bond he was sent to jail until his trial February 26. On that date Judge McCarthy found Kechek guilty of violating the medical practice act, sentenced him to an additional thirty days in jail, and also warned him not to violate the law again.

Society News—Dr Albert H Andrews among others, addressed the Chicago Laryngological and Otolological Society March 2 on "Indication for Operation in Acute Mastoiditis."—Dr William R Cubbins addressed the Chicago Society of Industrial Medicine and Surgery February 4 on 'Fractures of the Humerus,' and Dr Carl Scudari presented a Report of Five Hundred Consecutive Cases of Fracture of the Humerus in the Wards of the Cook County Hospital.—Dr Raymond W McNealy delivered the fifth annual Albert J Oschner Memorial address February 18 before a joint meeting of the Chicago Medical Society and its North Side Branch on 'Present Trend in Blood Vessel Surgery.'—Drs Fred M Smith and William D Paul Iowa City, among others addressed the Chicago Society of Internal Medicine, February 23 on 'Studies on the Mechanism of the Pain of Peptic Ulcer.'—A symposium on sterility was presented before a joint meeting of the Chicago Urological and Gynecological societies, February 26, the speakers being Drs Henry Schmitz and Victor D Lespinasse.—A symposium on diseases of the heart will be presented before the Chicago Medical Society March 18 by the following members of the faculty of Lovola University Medical School: Drs Thomas P Foley, Isadore M Trace and Italo F Volini. Mr Leonarde Keeler of the Scientific Crime Detection Laboratory, affiliated with Northwestern University, addressed the society, January 28, on "Practical Application of Emotional Changes."

INDIANA

Bills Introduced—S 284 proposes to authorize counties, certain cities, and districts composed of counties to establish and maintain full time health departments. S 324 proposes to prohibit the employment of nurses in hospitals longer than eight hours a day, except in emergencies. H 478 proposes to authorize cities of from 104,000 to 112,000 population to make appropriations to certain types of hospitals located therein. H 497 proposes to authorize cities of the second third fourth and fifth classes to establish departments of public sanitation.

Society News—Dr James O Ritchey Indianapolis addressed the Clinton County Medical Society, Frankfort February 5 on hypothyroidism.—Dr Clarence L Boel Muncie, addressed the Delaware-Blairford Counties Medical Society Muncie January 20 on intravenous ptyelography.—Dr Frank W Hartman Detroit addressed the St Joseph County Medical Society South Bend February 11 on Newer Aspects of the Nephritis Problem.—Meningitis in Children was the subject of Dr Arthur J Fletcher Danville Ill before the Fountain-Warren County Medical Society Hillsboro February 5.—Dr Edwin N Kime Indianapolis addressed the Gibson County Medical Society Princeton February 2 on 'Physical Therapy and Its Relation to General Practice.'

Dr Martin Dewey, New York addressed the Elkhart County Medical Association, Elkhart February 5, on 'Evolution and Development of the Heart and Face as Related to Certain Determinants.'—Dr Alfred S Giordano, South Bend addressed the LaPorte County Medical Society February 19 Michigan City on 'Undulant Fever.'—Dr Edward L Lingeman Indianapolis addressed the Wayne Union County Medical Society Richmond, February 19 on 'Common Colds.'—Dr Amzi Weaver, New Albany, addressed the Floyd County Medical Society, February 13 on 'Pulmonary Edema' with report of case.—Mr Albert Stump Indianapolis attorney for the state medical association addressed a joint meeting of the Muncie Bar Association and the Delaware-Blairford Counties Medical Society, Muncie February 17 on 'Expert Evidence in the Courts.'—The Indianapolis Medical Society will be addressed March 14 by Drs Robert M Darmin on 'Jugular Bulb Thrombosis with case report,' and Joseph W Rielletts 'Intragastric Photography.' The society will be addressed, March 24 by Dr David Smith on 'Conduct of Labor in Borderline Pelvis' and March 31 by Drs Edwin N Kime and Percy E McCown 'Status of Biophysics in Modern Medical Practice' and 'Discussion of the Etiology and Possible Prevention of Prostatic Hypertrophy,' respectively.

IOWA

Award for Service to Community—Dr and Mrs David Wilson Smouse formerly of Des Moines, now of Pasadena Calif received jointly the award given annually to the citizen of Des Moines who has given the greatest service to the community. It is commemorated by the presentation of a loving cup furnished by the Des Moines Tribune Capital. Dr and Mrs Smouse in 1929 gave \$330,000 for the founding of a school for handicapped children in Des Moines. The school which is to be known as the David W Smouse Opportunity School was to be opened to students March 9. It is to be operated as a part of the city school system and will care for children with orthopedic defects, deafness, defective vision, cardiac impairment and chorea. Mentally handicapped children are not to be admitted. Dr Smouse who is 77 years old engaged in practice in Des Moines for about forty years.

Society News—Dr Harold M Camp, Monmouth Ill addressed the Des Moines County Medical Society February 10 on 'How Public Health Education Affects the Physician.'—The sixth annual meeting of the Iowa Public Health Association will be held April 23, in Des Moines with headquarters at the Hotel Fort Des Moines. Drs Talruero Clark, Washington D C, and Arthur T McCormack Louisville, Ky will be the guest speakers.—Drs John L Kestel and Thomas F Thornton both of Waterloo addressed the Des Moines Academy of Medicine and the Polk County Medical Society January 27, on 'Objective Diagnostic Methods in Kidney Disorders' and 'Stone in the Ureter' respectively. Dr Irl C Riggan New York, addressed the society, February 25, on 'rheumatic heart disease in children.'—The annual meeting of the Iowa Tuberculosis Association, the Iowa Sanatorium Association and the Iowa Heart Association was held in Des Moines, February 26-27. Among the speakers were Drs Walter L Bierring, Des Moines, Irl C Riggan New York, Henry Boswell, Sanatorium Miss and Edward A Meyerding, St Paul.—Dr Warren H Cole, St Louis spoke before the Linn County Medical Society Cedar Rapids January 6 on 'infections of the liver.'—Dr Anthony C Pfohl addressed the Johnson County Medical Society, Iowa City, February 4, on 'acute intestinal obstruction.'—Dr Henry Schmitz Chicago addressed the Marshall County Medical Society January 6 on 'early diagnosis of cancer.'—Dr Dean M Lierle Iowa City, addressed the Scott County Medical Society Davenport, January 6, on 'allergy in relation to otolaryngology.'

KANSAS

Bill Introduced—S 379 proposes to require all chiropractors to register annually and to pay an annual fee of \$5.

LOUISIANA

Medical School for Louisiana University—Organization of a school of medicine as a part of Louisiana State University has recently been announced by Gov Huey P Long. Pre-medical work and the first two years of medicine are to be given at the university in Baton Rouge and the last two in connection with Charity Hospital New Orleans. Dr Arthur A Vidrine superintendent of Charity Hospital has been named dean and an advisory directorate has been appointed, consisting

of Drs James T Nix Jr, New Orleans, Arthur A Herold, Shreveport, and Dempsey C Iles, Lake Charles. Reported appointments to the teaching staff include Drs Clyde Brooks, at present professor of physiology and pharmacology at the University of Alabama School of Medicine, Tuscaloosa, who will occupy the same position in the new school, Henry N Blum, professor of clinical ophthalmology at Tulane University of Louisiana Graduate School of Medicine, head of the department of ophthalmology, Joseph N Roussel president of the staff of Touro Infirmary, head of the department of dermatology, Pierre Jorda Kahle, professor of urology at the graduate school of Tulane, head of the department of urology, Phillips J Carter, assistant professor of operative gynecology in the graduate school of medicine at Tulane head of the department of obstetrics, Russell E Stone New Orleans, who will be professor of clinical surgery in the new graduate school, Homer J Dupuy, Jr, professor of oral surgery, Loyola University, New Orleans, head of the department of otolaryngology, and Amedee Granger, head of the department of radiology at the graduate school of medicine at Tulane who will head a similar department in the proposed school. Construction of a new building for the medical school on the Charity Hospital grounds is expected to start about April 1 and the school will receive students next October, according to the plans.

MAINE

Bill Introduced—H 443 proposes to make it unlawful to sell any food, drink, medicine or toilet preparations intended for human use, or any antifreeze agent for motor vehicle radiators, which contains wood alcohol, methanol or methyl alcohol. Poison for other purposes may be made only in containers labeled "poison."

Society News—Dr Robert B Osgood, Boston, conducted postgraduate teaching clinics and lectured on arthritis at the Central Maine General Hospital Lewiston in January. —Dr Edward H Risley, Waterville delivered the annual president's address at the December meeting of the Kennebec County Medical Society on 'Traumatic Head Injuries'. —Dr Frederick T Lord, Boston, addressed the Penobscot County Medical Society, Bangor, in December, on pulmonary disturbances. —Drs William P Murphy and Samuel A Levine both of Boston, gave addresses before the York County Medical Society Biddeford January 8, on 'Diet in Disease' and 'Interpretation of Cardiac Irregularities,' respectively.

MARYLAND

Bills Introduced—H 182 proposes to provide that local boards of health shall each appoint in May 1931 and quadrennially thereafter, a health officer. No such appointment however, shall be made without the advice and consent of the state board of health. H 183 proposes that the state board of health shall divide the state outside of Baltimore city into twenty three sanitary districts and shall appoint a deputy health officer for each sanitary district.

Dr Frost to Succeed Dr Howell—Dr Wade Hampton Frost professor of epidemiology Johns Hopkins University School of Hygiene and Public Health, has been appointed dean of the school to take office July 1, when Dr William H Howell retires as director. In creating a deanship to take the place of the directorship, the university adopted a new ruling under which the dean is appointed for three years and is not eligible to succeed himself. Dr Frost was graduated from the University of Virginia Department of Medicine in 1903 and served on the staff of the U S Public Health Service for many years. In 1919 he went to Johns Hopkins as lecturer in epidemiology and became professor in 1921.

MICHIGAN

New Ruling on Internships—The Michigan State Board of Registration in Medicine has recently adopted a new rule under which two years service on the staff of an approved hospital for tuberculosis or for mental disease will be accepted in lieu of the present requirement of a one year rotating internship in a general hospital. This plan will make it possible for a physician intending to limit himself to these specialties to begin his chosen work immediately after graduation and it is hoped that more physicians will thus be induced to enter these fields.

Bills Introduced—H 144 proposes that any person arrested while driving a motor vehicle on public highways and charged with being intoxicated or under the influence of stupefying drugs may be taken by the arresting officer to a duly licensed

physician for examination, and the testimony of the examining physician shall be admitted at the trial. H 413 proposes to create a board of chiropractic examiners and to regulate the practice of chiropractic, defined as the locating of misaligned or displaced vertebrae of the human spine and the procedure preparatory to, and the adjustment by hand of such misaligned or displaced vertebrae and adjacent bones or tissues.

Society News—Mackinaw City, a village of 800 persons, was left without a physician when Dr Allen C Tiffany recently departed on account of ill health. The nearest physician is said to be in Cheboygan 20 miles away. —Dr Emil Amberg, Detroit, addressed the Bay County Medical Society, Bay City, January 14 on the hard of hearing child and the deaf child. —Dr Richard R Smith, Grand Rapids, addressed the Calhoun County Medical Society, Battle Creek, February 3 on 'Uterine Myomata and Their Treatment'. Dr Raphael Isaacson, Ann Arbor, addressed the society January 6 on 'Diagnosis and Treatment of the Blood Forming Organs'. —Dr Leo L Newfield addressed the Monrovia Medical Society, Detroit February 2, on 'Cardiac Pain and Coronary Disease' and Dr Sydney K Beigler February 9 on 'Chronic Pulmonary Suppuration'. —Drs Guy L Hunner, Baltimore, and William E Lower, Cleveland, addressed a joint meeting of the Detroit Roentgen Ray and Radium Society and the Detroit Academy of Surgery January 8 on 'Renal Hemorrhage' and 'Tumors of the Kidney and Their Surgical Treatment'. —Dr Norman R Kretzschmar, Ann Arbor addressed a recent meeting of the Monroe County Medical Society at Monroe on 'Abnormal Bleeding in Obstetrics and Gynecology'. —Dr John E Gordon, Detroit, addressed the Oakland County Medical Society, Pontiac, February 19 on 'Prevention and Treatment of Measles' and 'Diagnosis and Treatment of Preparalytic Poliomyelitis'. —A joint meeting of the Wayne County Medical Society and the Detroit Dental Society, February 10 was addressed by Drs Robert C Moehlig on 'Effect of Glutular Disturbances on the Teeth', Plinn F Morse, 'Relation of the Teeth to General Pathology' and Frederick Schreiber, 'Convulsions'. Dr Max Ballin addressed the Wayne County Medical Society, February 17, on 'Bone Changes Caused by Parathyroidism and Parathyroidectomy'. Dr Frank C Mann, Rochester, Minn, March 3, on 'Physiology of the Liver', and Dr William Engelbach St Louis, March 10 on 'Endocrines'. Dr John F Barnhill, Indianapolis will speak March 17 in a joint meeting with the Eye, Ear, Nose and Throat Society, on headache. Dr Willis F Manges Philadelphia, will address the society in conjunction with the Detroit branch of the American Roentgen Ray and Radium Society, March 24, on 'Foreign Bodies in Air Passages'.

MINNESOTA

Bills Introduced—H 529 proposes to provide that in the admission of patients to the Minnesota General Hospital preference shall be given to patients at the Hospital of the Minnesota State Soldiers' Home. H 569 proposes that any person who is a licensed assistant pharmacist at the date of its enactment who was actually employed in a drug store prior to April 23 1919, and who prior to the passage of the bill has duly applied for a license as a pharmacist shall be entitled to registration as a pharmacist on passing a satisfactory examination and the payment of the proper fee.

Naturopath Fined—William H Hirst, 53 years old, self-styled naturopath pleaded guilty in the district court, February 26 on charges of maintaining an office and using the title 'doctor' in violation of the basic science law, the state board of medical examiners reports. Judge John W Boerner sentenced him to pay a fine of \$500 or serve six months in the workhouse for the first charge. On the second charge he was sentenced to one year in the workhouse but the sentence was suspended on condition that he refrain from practicing, healing in Minnesota. Hirst paid the fine.

MISSOURI

Radium Reclaimed from Watch Dials—Students at the University of Missouri under the direction of Herman Schlundt, PhD professor of physical chemistry are reclaiming radium from old luminous watch and clock dial paint. By a process of removing the impurities of the paint by gradual crystallization and precipitation it is said that about 95 per cent of the radium is recovered. About 50 mg can be extracted from 100 gallons of paint. The laboratory is principally engaged in the refining of molybdenum and incidentally in the separation and conservation of other radioactive substances and by other

departments of the university in studies of the effects of radiation. Experiments are also in progress to determine the hazards incident to the handling of radioactive substances.

Bills Introduced—H 583 proposes to make it unlawful for any itinerant vender to sell or in any other way distribute any drug, nostrum, ointment or application, whether intended for the treatment of disease or injury or not. Nothing in the act, however is to apply to licensed practitioners of medicine, surgery, dentistry, veterinary surgery or medicine, homeopathy or pharmacy. H 584 proposes to require employees in hotels, restaurants, cafes and lunch rooms to undergo such physical examinations at least once every six months, as will indicate freedom from infectious, contagious or chronic diseases. H 589 proposes to grant the state board of health general supervision of all nervous and mental hospitals and all institutions treating nervous and mental diseases. H 617 proposes to authorize the establishment of a psychopathic hospital, in two units of approximately 100 beds each, at a cost not to exceed \$1,400,000.

NEW MEXICO

Bill Introduced—S 94 proposes a new act to regulate the manufacture, possession, use, control and disposal of certain narcotic drugs.

Dr Earp Appointed State Health Officer—Dr J Roslyn Earp, formerly of Boulder Colo., has been appointed director of the bureau of public welfare of New Mexico, succeeding Dr George Sparr Lockett, who resigned several months ago. Dr Earp, a native of England, was recently scientific editor of *Colorado Medicine*.

NEW YORK

Society News—A conference of health workers called by Dr Thomas Parran, Jr., state health commissioner, was held at Albany, January 21, to outline a campaign for reducing the number of cases of measles among children under 3 years of age. —Dr John S McCormick, Albany, among others, addressed the Albany County Medical Society, January 11, on 'Congenital Absence of a Portion of the Esophagus.' Drs Jonathan M. Wainwright, Scranton, Pa. and Burton T. Simpson, Buffalo, addressed the society, February 27 on 'Importance of the Tumor Clinic in the Solution of the Cancer Problem' and 'Responsibility of the General Practitioner in the Early Diagnosis of Cancer,' respectively.

Outbreak of Gastro-Enteritis Traced to Well Water—Following a supper at which about 100 people were served in a community in the northern part of the state, Dec 11, 1930, many persons who had partaken of the meal suffered attacks of vomiting, pain, diarrhea and exhaustion. Most of the patients recovered in from two to five days. Forty feet away and at a slight elevation above a well from which the water for the meal was taken there was a privy. Investigation showed that a member of the household residing on the property had had a severe attack of gastro enteritis three weeks prior to the supper, and one week later another member of the family had a like illness. The symptoms in both cases were similar to those of the persons who became ill after the supper. A sample of water from the well examined at the state laboratory was found to be polluted. *B. dysenteriae* of both the Flexner and the Sonne types were isolated at the state laboratory from specimens of feces submitted from those who were ill.

New York City

Sixth Harvey Lecture—Dr James B. Herrick, emeritus professor of medicine, Rush Medical College, University of Chicago will deliver the sixth Harvey Society Lecture March 19 at the New York Academy of Medicine on 'The Coronary Artery in Health and Disease.'

Physicians as Artists—Oil paintings, water colors, photographs, etchings, linoleum cuts, sculpture and wood carvings are among the varied work shown at the fifth annual art exhibit sponsored by the New York Physicians' Art Club at the New York Academy of Medicine. Among the sixty-three exhibitors are Drs Benjamin S. Barringer, president of the club who is showing three oil paintings, Solomon Bauch and Louis C. Schroeder, oil paintings. Henry S. Patterson and Henry A. Bancel, marines and landscapes in water color, Carlo D. Martignetti, Orange N. J., snow scene in oil. Harris P. Mosher, Boston, etchings and wood carvings. Isaac Seth Hirsch, sculpture. Max Thorek, Chicago. Theron W. Kilmer and Lionel S. Aufer, photographs and H. Fischer, linoleum cuts and etchings. Except for one of Dr Barringer's paintings, one of

a gnarled tree, which he named "Arteriosclerosis," there is no reference to medicine in the exhibition, in which there are 233 individual exhibits.

Diphtheria Decreased 57 Per Cent in 1930—The lowest death rate for diphtheria on record in New York is shown in the report of the commissioner of health for 1930. There were during the year only 199 deaths, a decrease of 57 per cent from 1929, and 3,806 cases as against 8,548 in 1929. The reduction is attributed to the concentrated drive made by the special commission during 1929 and 1930. The death rate from measles showed a striking decrease, 153 deaths as compared with 1038 in 1928, the last epidemic year. This was the result of extensive use of convalescent serum, the commissioner reported. Two cases of smallpox were reported with no deaths; there have been only two deaths from smallpox in New York in eighteen years. Cancer showed the highest death rate on record in the city, 116 per hundred thousand. Heart disease showed a decrease of 527 deaths from the preceding year. The general death rate was 10.76, a slight decrease, and the infant rate was 57 per thousand births. There were no epidemics in 1930.

Society News—A total of 3,590 pints of human blood was transfused during 1930 from donors enrolled in the Blood Transfusion Betterment Association; it is reported 3,056 transfusions were made, for which approximately \$170,000 was paid. There are 800 professional blood donors registered in the association. —The Harlem Medical Association celebrated the sixtieth anniversary of its founding at a dinner, February 26. Dr Charles Gordon Heyd gave an address on 'The Future of Medicine' and Dr Louis I. Harris, on 'Medicine and Society.' —Dr Henry F. Graham addressed the Medical Society of the County of Kings, February 17 on the value of early operation for acute cholecystitis. —The New York Academy of Medicine was addressed March 5 by Drs Charles A. Elsberg on 'The Edwin Smith Surgical Papyrus and the Diagnosis and Treatment of Injuries to the Skull and Spine 5,000 Years Ago.' —Dr Foster Kennedy addressed the International and Spanish Speaking Physicians, Dentists and Pharmacists, February 27 on 'The Nature of Epilepsy,' and Dr Miran B. Proungian on syphilis. —Dr Ralph Pemberton, Philadelphia, addressed the New York Physical Therapy Society, March 4, on 'Physiologic Action and Therapeutics of Massage.' —Dr Reuben Ottenberg delivered the fifteenth afternoon lecture at the New York Academy of Medicine March 6 on 'Practical Advances in the Study of the Liver and Its Diseases,' and Dr Henry K. Pancoast, Philadelphia, the sixteenth March 13 on 'Silicosis: Its Present Aspect.' —Dr Joseph C. Bloodgood, Baltimore, addressed the Medical Society of the County of Queens March 6 on the opportunities offered to county medical societies by the developments of modern medicine.

OHIO

Athletic Coaches Must Take Health Courses—Athletic coaches in Ohio will henceforth be considered teachers of health and education in the eyes of the division of certification; the state department of education has announced. As such they must have a minor of twelve semester hours in health and physical education for part time work and a major of forty semester hours for full time. The ruling does not affect those who now hold certificates but is expected to be in full force by 1935.

Bills Introduced—S 186, to amend the workmen's compensation act, proposes to add to the list of those occupational diseases already compensable manganese dioxide poisoning, radium poisoning, tenosynovitis and prepatellar bursitis, chrome ulceration of the skin or nasal passages, potassium cyanide poisoning and sulphur dioxide poisoning. S 212 and H 266 propose to authorize physicians to prescribe pure grain or ethyl alcohol or spirituous liquor in quantities now or hereafter permitted by federal statutes and regulations. S 245 authorizes the state board of health to appoint inspectors of dairies and of slaughter houses and such other persons as are necessary to carry out the provisions of the code relative to the inspection of foods and supplies and to grant them general police powers. S 247 proposes to authorize physicians to prescribe not more than one pint of liquor in a ten day period to a patient and prohibits the prescribing of wine containing more than 21 per cent of alcohol by volume.

Personal—Dr Floyd R. Stamp, Alliance has been appointed health commissioner of Stark County; it is reported to succeed Dr Chester M. Peters, Canton, who resigned after eleven years.

service, to devote his time to private practice—Dr George E. Hollansbee was elected president of the Cleveland Medical Library Association, January 19. Dr Ales Hrdlicka, Washington, D. C., addressed the meeting on "Disease, Medicine and Surgery in Prehistoric America"—Dr William Edgar Wheatley, Lorain, was recently selected as the recipient of the 1930 Achievement Award presented by the Lorain Journal to the town's most valuable citizen. Dr Wheatley has practiced in Lorain for thirty years—Dr John S. Hagen, Cincinnati was recently appointed a member of the state medical board of Ohio to succeed the late Dr John K. Scudder—Dr George W. Crile, head of the Cleveland Clinic and professor emeritus of surgery at Western Reserve University School of Medicine was the guest of honor at a dinner given by about 400 physicians, February 23. Dr Charles H. Mayo, Rochester, Minn. was the principal speaker—Dr Joseph H. Kinnaman, chief medical inspector and assistant health officer of Cincinnati has resigned to become deputy health commissioner of Iowa—Dr John Dean Boylan, Milford Center, has been appointed health commissioner for Union County to finish the term of Dr Harry G. Southard, Marysville, who resigned to become state health officer—Dr Loy C. Schiff, Ashville, has been named health commissioner of Pickaway County to succeed the late Dr Addison L. Stump—Dr Millard C. Hanson, Mansfield was appointed health commissioner of Mansfield and Richland County to succeed Dr Theodore R. Meyer, who resigned, March 1.

OKLAHOMA

Bills Introduced—S. 127, to amend the narcotic act proposes to include in the list of those substances classed as narcotics "marijuana, or a preparation known as such cannabis from the plant cannabis sativa, family Moraceae its preparations or derivatives." H. 300 proposes to make it a cause for divorce for one spouse to be found incurably insane and committed to an institution for the treatment of insane persons.

Society News—Dr Henry H. Turner, Oklahoma City, among others, addressed a joint meeting of the Okmulgee and Okfuskee county medical societies, January 19, on "Relationship Between Neurology and Endocrinology"—Dr William P. Fite, Muskogee, addressed the Pottawatomie County Medical Society at Shawnee, January 17, on arthritis. Dr Willis Kelly West, Oklahoma City, presented a motion picture on "The Technique of Arthrodesis of the Hip Joint by Surgical Procedure."

OREGON

University News—Dr Eleonora T. Bell, professor of pathology, University of Minnesota Medical School delivered the N. W. Jones Lectures under the auspices of the University of Oregon Medical School, March 4-6. Dr Bell's topics were "Glomerulonephritis," "Nephrosis" and "Vascular Diseases of the Kidney."

Bills Introduced—S. 332 proposes that any registered pharmacist who has been paying annual renewal fees for twenty years or more and who is not actively engaged in the practice of pharmacy shall be carried in good standing without further payment until such time as he again enters active practice. S. 340 proposes to provide that the board of pharmacy may issue a certificate of registration to any person residing in the state for at least ten years, who has had at least ten years experience under the supervision of a registered pharmacist. S. 350, to amend the medical practice act proposes that when any woman furnishes the board of medical examiners with a sworn statement that any licensee has performed an abortion on her, the board shall immediately forward such sworn statement to the proper district attorney.

PENNSYLVANIA

Society News—Dr William A. Frontz, Baltimore, addressed the Cambria County Medical Society, February 12, on "The Diagnosis of Hematuria"—Dr Elmer H. Funk, Philadelphia, addressed the Northampton County Medical Society, February 20, on "Problems in the Diagnosis of Thoracic Disease"—Dr William D. Stroud, Philadelphia, addressed the Lehigh Valley Medical Association, Hazleton, February 11, on treatment of cardiovascular disease—Infection of the teeth and its relation to systemic disease was the subject of discussion at a joint meeting of the Erie County medical and dental societies, February 11, at which Dr Werner J. Rose, Buffalo, N. Y., and Thomas J. Hill, D.D.S., Cleveland, Ohio, were the principal speakers—Dr William Gerry Morgan, Washington, D. C., addressed the Lecoming County Medical Society, Wil-

transport in January, on "Some Observations on Etiology." At a meeting, February 13, Drs. Frederick E. Keller, Philadelphia, and John A. Campbell addressed the society on "Pelvic Surgery with Low Hemoglobin" and colitis, respectively—Dr George F. Suker, Chicago, addressed the Pittsburgh Ophthalmological Society, February 23, on "Retinal Complications in Cardiovascular Lesions"—Dr Howard S. Reiter, Brownsville, addressed the Fayette County Medical Society, among others, March 5, at Uniontown, on dystocia.

Philadelphia

Da Costa Day—Dr John Chalmers Da Costa, Samuel D. Gross professor of surgery, Jefferson Medical College, delivered a lecture reviewing his forty years' active work in surgery as the principal feature of the first observance of Da Costa Day by the Philadelphia County Medical Society, March 11. Da Costa Day was inaugurated, April 30, 1930, with the establishment of the John Chalmers Da Costa Foundation for the purpose of furthering postgraduate teaching under the auspices of the society.

Society News—Dr Damaso de Rivas gave the weekly seminar lecture under the auspices of the Philadelphia County Medical Society, February 27, on "Parasitology from the Clinical Standpoint." Dr John A. McGinn was the speaker, March 6, on "Responsibility of the Obstetrician in the Recognition and Treatment of Thymic Disorders in New-Born Babies"—Dr Herbert T. Kelly addressed the Philadelphia Medical Examiners Association, March 2, on "Significance of Sugar in the Urine"—Drs. Robert H. Ivy and Lawrence Curtis addressed the Philadelphia Academy of Surgery, March 2, on "Fractures of the Upper Jaw and Maxilla Bone," and B. Franklin Buzby, "Internal Derangements of the Knee"—Dr Francis V. Gowen addressed the Philadelphia Laryngological Society, March 3, on "Scarlet Fever Sinusitis"—Dr Catherine Macfarlane addressed the Obstetrical Society of Philadelphia, March 5, on "Carcinoma Developing in a Myomatous Uterus Following X-Ray Menopause."

SOUTH DAKOTA

Bill Introduced—H. 42, to amend the workmen's compensation act, proposes to raise to \$200 the amount for which an employer will be liable on account of medical and hospital services rendered an injured employee and to provide that in exceptional cases the employer shall furnish such additional medical, surgical and hospital services as the industrial commission shall order, but in no event to exceed an additional \$100.

TENNESSEE

Health at Nashville—Telegraphic reports to the U. S. Department of Commerce from eighty-one cities with a total population of 36 million for the week ended February 28 indicate that the highest mortality rate (25.8) appears for Nashville and the rate for the group of cities as a whole, 14. The mortality rate for Nashville for the corresponding period in 1930 was 13.9 and for the group of cities 14.1. The annual rate for the eighty-one cities for the nine weeks of 1931 was 14.2 as compared with a rate of 13.4 for the corresponding weeks of 1930. Caution is necessary in the interpretation of these figures as weekly figures fluctuate widely. The fact that some cities are hospital centers for large areas outside the city or that they have large Negro populations may tend to increase the death rate.

TEXAS

Bills Introduced—H. 569 proposes that the state require the Texas Dental College located in Houston and operate it as a state school of dentistry under the same name. H. 692 proposes to authorize the establishment of a tuberculosis sanatorium for Negroes.

UTAH

Bill Introduced—S. 103 to amend the optometry practice act proposes to add to the list of grounds for the revocation of licenses (1) soliciting from house to house or sending a solicitor from house to house and (2) failure to deliver a certificate of identification as required by the act. It also proposes to make it a misdemeanor to sell at retail as merchandise in any store or established by mess any spectacles, eyeglasses or lenses unless a duly licensed physician or duly qualified optometrist is in charge of and in personal attendance at the place where the articles are sold.

WISCONSIN

Personal—Dr Merle R. French resigned February 7, as director of the contagious disease division of the Milwaukee health department. He has been appointed state epidemiologist of New York; it is reported—Dr Norman L. Howison has resigned as attending physician at the Dunn County Asylum and County Home Menominee after thirty years' service.

Society News—Dr Harry R. Foerster was recently elected president of the Milwaukee Academy of Medicine and Dr David F. W. Wenstrand, secretary. Dr William S. Middleton, Madison, discussed pernicious anemia and Dr Carl W. Eberbach, injection treatment for varicose veins, before the Milwaukee County Medical Society, February 13. Dr Charles F. Sawyer, Chicago, addressed the Outagamie County Medical Society, Appleton, February 19, on intestinal obstruction. Dr Joseph W. Gale, Madison, addressed the Marathon County Medical Society, Wausau, February 18, on diseases of the breast. Dr William S. Middleton, Madison, addressed the Green Lake Waushara Adams County Medical Society, recently, on 'Clinical Interpretation and Treatment of Nephritis'. Dr Jules Duesberg, professor of anatomy and rector at the University of Liege, Belgium, addressed the University of Wisconsin Medical Society and the biologic division of the university, February 9-10, on 'Experimental Cytology'. George L. Clark, Ph.D., professor of chemistry, University of Illinois, will address the society, March 18, on 'Analysis of Tissue by X Rays'.

GENERAL

Four Weeks of Automobile Fatalities—Eighty-one large cities in the United States reported to the U. S. Department of Commerce 614 deaths from automobile accidents during the four weeks ended February 21, as compared with 574 deaths during the four weeks ended Feb. 22, 1930. Most of these deaths resulted from accidents within the corporate limits of cities, although some accidents occurred outside the city limits. The number of deaths within city limits was 515 contrasted with 491 for the corresponding period of 1930. For the fifty-two week periods ended February 21 and Feb. 22, 1930, the totals for the eighty-one cities were respectively, 8,937 and 8,668, which indicate a recent rate of 25.6 per hundred thousand of population as against an earlier rate of 25.3. Eight cities reported no deaths from automobile accidents during the four weeks compared with five cities for the corresponding period in 1930.

"Jake" Paralysis Still Being Reported—The U. S. Public Health Service recently announced that cases of jamaica ginger paralysis are still occurring in the United States. It was announced some time ago that the cause of jamaica ginger paralysis had been determined to be triorthocresyl phosphate, which evidently had been used as an adulterant in the manufacture of jamaica ginger extract. It is desired to give publicity to the fact that all persons should avoid the use of jamaica ginger extract as a beverage. No cases of this poisoning have been reported in connection with the use of any other ginger products or preparations; it is reported, the cases observed having been associated with the improper or illicit use of jamaica ginger extract. It had not been determined February 16 whether the recent cases had been caused by the use of the older preparation or whether it is a new product being marketed by unscrupulous manufacturers. Newspapers February 3 reported twenty-five cases in Los Angeles and thirty cases were reported March 3 among inmates of the National Soldiers Home Hospital at Sawtelle, Calif.

Medical Bills in Congress—S. 255, the Jones maternity, infant and rural hygiene bill, failed of passage, its proponents having been unable to secure a vote in the Senate on the substitute bill passed by the House. S. 1812 has been signed by the President authorizing the collection of annual statistics relating to crime and to the defective, dependent and delinquent classes. S. 5139 has been signed by the President extending the provisions of certain laws relating to vocational education and civilian rehabilitation to Porto Rico. S. 5659 has been signed by the President authorizing the purchase by the federal government of the state laboratory at Hamilton, Mont., constructed for the prevention, eradication and cure of spotted fever. S. 6171 has been signed by the President regulating the prescribing and use of waters from the Hot Springs National Park at Hot Springs, Ark. H. J. Res. 480 has been signed by the President authorizing an appropriation to defray the expenses of participation by the United States in the Conference on the Limitation of the Manufacture of Narcotic

Drugs to be held at Geneva, Switzerland, May 27. H. R. 16982 has been signed by the President, authorizing an appropriation of \$20,877,000 to provide additional hospital, domiciliary and outpatient dispensary facilities for persons entitled to hospitalization under the World War Veterans' Act, 1924, as amended.

Society News—The annual meeting of the recently organized Western Branch of the American Public Health Association will be held in Seattle, May 28-30, with headquarters at the Olympic Hotel. Local arrangements are in charge of Dr Ernest T. Hanley, city health officer. The secretary is Dr William P. Shepard, 600 Stockton Street, San Francisco. The Medical Library Association will hold its annual meeting, May 19-21, in New Orleans. At the annual meeting of the Tri-State Medical Association (Tennessee, Mississippi, Arkansas), February 17-20, Dr Andrew G. Payne, Greenville, Miss., was installed as president, and Dr Lowry H. McDaniel, Tyrone, Ark., was made president elect. On the program were Drs William B. Coley, New York, Russell L. Haden, Cleveland, and Theodore C. Hempelmann, St. Louis. John Shelton Horsley, Richmond, Va., Cyrus C. Sturgis, Ann Arbor, Mich., and William Gerry Morgan, Washington, D. C., The association which is in its forty-seventh year, changed its name to the Mid-South Post-Graduate Medical Association. Dr Beverley R. Tucker, Richmond, was elected president of the Tri-State Medical Association of Virginia, North Carolina and South Carolina at its thirty-third annual meeting, February 16-17, at Richmond. The next meeting will be in Raleigh, N. C. Homer N. Calver, for seven and a half years executive secretary of the American Public Health Association, resigned January 1. W. Frank Walker, D. P. H., a member of the association's staff, is acting executive secretary pending the appointment of Mr. Calver's successor.

Bequests and Donations—The following bequests and donations have recently been announced:

Jewish Hospital, Philadelphia, \$10,000 by Mrs. Henry Fernberger. Philadelphia to defray the expense of equipping a new electrotherapeutic department.
Long Island College Hospital, Brooklyn, \$25,000 by the will of the late Percy S. Dudley.
New York Institute for the Deaf and Dumb, \$5,000 by the will of its late president Samuel Rositer Bitts.
Ebronon Hospital, Beth Israel Hospital and Jewish Memorial Hospital, all of New York, each \$5,000 by the will of the late Abraham Savada.
Long Island College Hospital Alumnae Association, \$30,000 by the will of the late Miss Anna M. Wilbur.
Fifth Avenue and St. Luke's hospitals, New York, each \$100,000 by the will of the late Adolph L. Condrin.
Jewish Hospital, \$10,000 and \$500 each to the University, Jefferson and Temple hospitals, all of Philadelphia, by the will of Henry L. Weinberger.
Jefferson Medical College, \$30,000 for the establishment of four scholarships for the education and maintenance of deserving young men whose means are limited, by the will of Dr. William T. Hamilton.
All Souls and Morristown Memorial hospitals, Morristown, N. J., each \$25,000 by the will of Gertrude I. Thebaud.
Hackensack Hospital, Hackensack, N. J., and Passaic General Hospital, Passaic, each \$25,000 by the will of Frederick L. Adams.
Willard Fillmore Hospital, Buffalo, \$25,245.23 for the establishment of a memorial, by the will of the late Dr. Francis Marion Rich.
Maryland School for the Blind, Overlea, and the Hospital for Consumptives of Maryland, Towson, each \$10,000 and the Presbyterian Eye, Ear and Throat Charity Hospital, Baltimore, each \$5,000 by the will of Miss Margaret E. Maund, Baltimore.
Women's and Harper hospitals, Detroit, each \$2,500 by the will of Richard P. Joy.
Johns Hopkins Hospital, \$50,000 in addition to sharing with Johns Hopkins University in the ultimate distribution of the residue of the estate at which time the institution will receive \$700,000. Children's Hospital School, Baltimore, and Hospital for Consumptives of Maryland, Towson, each \$10,000 and the Baltimore Eye, Ear and Throat Hospital, \$2,500 by the will of the late Mr. William A. Marbury.
Union Memorial Hospital, Hospital for the Women of Maryland and Johns Hopkins Hospital, Baltimore, will receive one-half, three-tenths and two-tenths respectively of the major portion of a \$600,000 estate by the will of the late Francis Burns Harvey, Baltimore.
Roosevelt Hospital, New York, \$10,000. New York Skin and Cancer Hospital and St. Mary's Free Hospital for Children, \$5,000 each and St. Luke's Hospital, New York, \$3,000 by the will of the late Mrs. David H. Lydig.
Monmouth Memorial Hospital, Long Branch, N. J., Stony Wold Sanatorium, Lake Kuschka, N. Y., and Montefiore Hospital, New York, each \$3,000 and Mount Sinai Hospital, New York, \$7,500 by the will of the late Mrs. Edgar J. Kahler.
University of Texas, Galveston, \$10,000 by the will of the late Dr. Benjamin O. Thrasher. El Paso, the amount to be used for the medical department of the university. Dr. Thrasher's preference was that the sum be used in connection with the chair of mental diseases in the university.
Jewish, Jefferson and Pennsylvania hospitals and the Federation of Jewish Charities, all of Philadelphia, each \$1,000 by the will of the late Joseph E. Sulzberger.
University of Chicago, about \$1,000,000 for medical research. Michael Reese Hospital, \$500,000. Jewish Charities of Chicago, \$50,000. St. Luke's Hospital, \$10,000. All of Chicago and National Jewish Hospital for Consumptives, Denver, \$5,000 by the will of the late Albert Kuppenheimer.
Wilmington General Hospital, Wilmington, Del., \$200,000 for the building of a contagious disease ward from Mr. and Mrs. Irene du Pont.

Cermantown Dispensary and Hospital Philadelphia \$30 000 as a fund to found free beds in the men and women's wards by the will of Miss Helen Huber
Hahnemann Medical College and Hospital Philadelphia \$100 000 outright and \$10 000 for endowing beds by the will of the late Miss Fanny Augusta Shortridge
Prebyterian Hospital Philadelphia \$20 000 by the will of Col William J Elliott
Hospital for Joint Diseases New York \$1 000 000 Mount Sinai and Lebanon Hospitals New York St Joseph's Hospital Far Rockaway and National Jewish Hospital for Consumptives Denver each \$5 000 Monte fiore Hospital \$10 000 Bar Moriah Hospital and Beth Israel Hospital New York each \$2 500 by the will of the late Alfred M Heinsheimer

Government Services

Army Personals

Majors Frank N Stiles and Wayne R Beardsley and Capts Amos S Kinzer and Arthur Morehouse having been found incapacitated for active service by an army retiring board on account of disability incident thereto, their retirement is announced, effective Nov 30, 1930, Capt William J Trebourn proceeded to his home about Nov 30, 1930 to await retirement for the convenience of the government Capt James E Yarbrough is relieved from duties at Walter Reed General Hospital, Washington, D C, he sailed about January 8 for Porto Rico, Capt Ray H Skaggs is relieved from duties at San Juan, P R, effective on completion of present tour of foreign service, and is assigned to duty at Walter Reed General Hospital, Capt William C Williams is assigned to duty at the Army Medical Center, Washington, D C effective on completion of his present tour of foreign service Capt William D North sailed from San Francisco about February 28 for duty in the Panama Canal Department Major William C Porter sailed for San Francisco about February 17 for duty in the Letterman General Hospital, Capt Meyer McC Dougherty, relieved in the Philippine Department and assigned to duty at Letterman General Hospital Presidio of San Francisco Capt Arthur E Brown, relieved at Walter Reed General Hospital, Army Medical Center Washington D C he will sail about May 5 from New York for the Philippine Department, Capt Dean M Walker will sail from San Francisco about April 9 for duty in the Hawaiian Department Major Bonaparte P Norvell, assigned to duty at Miller Field New York, effective on completion of his present tour of foreign service Capt Chester B Leedom will sail from New York about May 26 for duty in the Hawaiian Department Major Leland E Dashiell is assigned to duty at Letterman General Hospital, San Francisco effective on completion of his present tour of foreign service Lieut Comdr Toson O Summers from the naval station, St Thomas V I to the U S Naval Hospital, New York Lieut Clyde M Longstreth from the first brigade, U S Marines, Haiti to the naval air station, Hampton Roads, Va Lieut George W Cooper from the Public Health Service of Haiti to the U S S Sacramento

U S Public Health Service

Asst Surg Edward J Rencke has been relieved from duty on Corst Gurrut Cutter *Sebago* New York, and assigned at marine hospital, New York, Asst Surg Frank F Thwertt, Jr relieved at Ellis Island N Y and assigned in charge at marine hospital, Vineyard Haven Mass Asst Surg Maurice A Roe relieved at Manila, P I, and assigned to duty at marine hospital, San Francisco Asst Surgs Vane M Hoge and Roscoe C Kash, relieved at marine hospital New York and Ellis Island N Y respectively and assigned to duty at the National Institute of Health Washington D C Passed Asst Surg Francis A Ashford relieved at Dublin, Irish Free State, and assigned at Ellis Island, N Y

Vacancies in Government Positions

The U S Civil Service Commission announces that it is in need of eligibles to fill the following medical officer positions
Acting assistant surgeon U S Public Health Service Galveston Texas \$3 800 a year
Acting assistant surgeon qualified in trachoma work U S Public Health Service Ellis Island N Y \$3 000 a year
Acting assistant surgeon for work in pathology U S Public Health Service Ellis Island N Y \$3 000 a year
Medical officer qualified in neuropsychiatry U S Veteran Bureau San Francisco \$3 800 a year
Full information may be obtained by addressing the U S Civil Service Commission, Washington D C

Foreign Letters

LONDON

(From Our Regular Correspondent)

Feb 14, 1931

The Milk Problem

In the House of Lords, speaking on a plea made for a national effort to increase the supply of milk by increasing the demand by means of propaganda, Lord Moynihan supported the project with qualifications He said that milk was often contaminated with the result that it caused a number of diseases A hundred people died every day from tuberculosis and \$1 250 000 a day was spent in this country on the treatment of tuberculosis, a large proportion of which was preventable Of the 3,250,000 cows in this country giving milk, more than 1,000 000 were tuberculous What was to be done? If they slaughtered all tuberculous cows, he thought it would be ineffective except as regards the immediate result To immunize the animals would be a matter of great difficulty and uncertainty The problem was to improve the present condition of the milk supply Boiling would destroy all the organisms and was expensive Every drop of milk taken into his house was boiled There were some disadvantages, but the nutritive value, contrary to general opinion, was not diminished However, the vitamins were destroyed, and from the point of view of general consumption the value of the milk was reduced Another method was pasteurization Ninety per cent of the milk in London and Manchester was pasteurized But it was essential that the machinery of pasteurization should be constantly supervised and the greatest possible bacteriologic control exercised at every stage The milk for pasteurization should be as pure as possible There was no doubt that an increased supply of milk was necessary, and it might be well if the government would set up a commission to reconstruct all the knowledge that had been obtained about the problem

Replying for the government, Earl de la Warr, parliamentary secretary to the ministry of agriculture, blamed the medical profession One reason why more clean milk was not produced in this country was the lack of demand If physicians would talk a bit less about dirty milk and do a little more to encourage the buying of the clean milk already on the market, they would be of more use to the nation (Here Lord Moynihan interjected 'We want you to produce pure milk Until that is done we suggest pasteurization') The total production of milk in this country was 1,100 000 000 gallons, of which about 600 000 000 was consumed as liquid milk To bring our consumption up to that of the United States we would require 700 000 000 gallons more than we were producing at present, and if we consumed as much milk a head as was consumed in Sweden we should need a supply of 3,600 000 000 gallons He agreed that our grade designations were unsatisfactory, but the problem was difficult and if he could get general support for a revision he would be only too glad to discuss the matter with the producers

Institution for Surgical Research

The Royal College of Surgeons has made greatly increased provision for surgical research It has accepted the offer of Mr George Buckston Browne a retired genito urinary surgeon, to build and endow an institution of surgical biologic research on an estate at Downe in Kent, which he will present to the college The estate is 16 miles from London and adjoins the western side of Darwin's old home which with its 23 acres of land was presented by the same benefactor to the British Association to be preserved as a museum of Darwin relics and a memorial Mr Browne is willing to endow the new estate with an initial sum of \$270 000 and to add further gifts and legacies until the total amount reaches \$500 000 In a letter to Lord Moynihan, president of the college Mr Browne states

his belief that those who add to the science and art of surgery are among the greatest of all benefactors of the human race and the domesticated animals. He therefore wishes to form an institution in which surgeons, and particularly young surgeons, will have full opportunity to carry out their investigations. The institution will contain three or four laboratories where investigations can be made under the best conditions, or where living animals can be carefully observed and cared for. The detailed work of examining the results will be carried out in the laboratories of the Royal College of Surgeons in London, in connection with which four research scholarships have recently been founded. There is therefore no need to provide pathologic laboratories at Downe. The direction of the preliminary stages of the project is to be entrusted to the conservator of the museum, Sir Arthur Keith. The endowment is intended as a second stage in a scheme for making the college a center of surgical research for the empire as a whole. The president, Lord Moynehan, has taken an active part in the new step. It may be remembered that recently, both in Toronto and in London, he complained that the researches of physiologists were remote from the needs of surgery. No doubt the researches at the Institution of Surgical Research will be designed for the solution of surgical problems.

Enlarged Tonsils, Rickets and Dental Disease

In a second interim report, the Committee of the Board of Education on Adenoids and Enlarged Tonsils discusses the association of these diseases with rickets and dental disease. It finds that extensive enlargement occurs with somewhat greater frequency among children showing signs of rickets, dental disease and hypoplasia than among those who do not show such evidences of vitamin deficiency. The association that has been shown to exist between these conditions and the more extensive adenoid growths, though not dramatic, is too extensive to be regarded as a coincidence. These growths occur frequently among children showing several signs of rickets, in the proportion of about 5 to 3, among children showing extensive caries in the proportion of $4\frac{1}{2}$ to 3, and among those showing severe hypoplasia of the teeth in the proportion of 5 to 3, as compared with children not having such defects. The nature of the relation, however, is not definitely established. The social factors which, taken together, enable the general 'class' of one school to be distinguished from that of another, while they definitely affect the incidence of rickets and caries, have no effect on the incidence of adenoids. This is in harmony with the results of the previous investigation, in which no substantial difference was found in the average extent of the domestic accommodation between the cases and the controls. It seems that the habits of life which predispose to the growth of adenoids are as common in the roomy houses of the comparatively well-to-do as in those of the poorest class.

Archibald Leitch is Dead

Professor Archibald Leitch, director of the research department of the Cancer Hospital, London, has died at the age of 52. Born, June 3, 1878, he graduated in medicine from Glasgow University with distinction. He became house surgeon at the Cancer Hospital, where he decided to take up cancer research. He was appointed assistant to Prof. Lazarus Barlow, director of the Cancer Research Laboratory of the Middlesex Hospital. In 1920 he became director of the research department of the Cancer Hospital. He energetically took up the study of experimental carcinogenesis begun by the Japanese workers Yamagiwa and Ishikawa—the production of cancer by applying tar to the skin of rabbits or mice. He discovered the important fact that when the application was made for a shorter period than that required to produce visible changes in the skin—the method of previous investigators—cancer ultimately developed on the apparently unchanged skin after an interval of a certain number of months in some of the animals. This explained those cases

in which pitch, tar or shale oil workers developed cancer, years after they had taken up another occupation. He studied occupational cancer and tested various materials, including tars, shal oils and lubricating oils, for their carcinogenic properties. In conjunction with Kennaway, he showed that substances which are not carcinogenic can be made so under the influence of high temperature and therefore suggested that there may occur in the body at normal temperatures processes having effects similar to those which are produced by great heat outside the body. He was the editor of the report of the British Empire Cancer Campaign Conference, held in London in 1928, and secretary of the scientific investigation committee, and a member of the grand council and other committees of the campaign.

Vital Statistics The Falling Birth Rate

In the final volume of the registrar-general's statistical review for 1929 just published, the severe epidemic of influenza, which occurred in the early part of the year, is described as the worst since the epidemic of 1918-1919, which followed the war and increased the general mortality by 16 per cent as compared with the previous year. Satisfactory features of the report are reduction from the mortality of diabetes under the age of 55 since the introduction of insulin, and reduction in the mortality from pernicious anemia since the introduction of liver treatment. In 1921 the next inequality was expressed by the ratio of 109 females to 1,000 males, in 1929 the ratio was 1086 to 1,000. The marriage rate (15.8 per thousand of population) was slightly higher than in the previous year and was the highest since 1921. The birth rate (16.3 per thousand) was the lowest ever recorded. The rise in the average age of the population, produced by the constantly falling birth rate, is shown by the fact that the deaths of persons over 70 numbered 389 per 10,000 of population, against 297 in 1911. During 1929, 98 centenarians died, 25 men and 73 women. The striking feature of the report is the maintenance of the marriage rate, which is somewhat above the prewar level notwithstanding the industrial depression. The fall in the birth rate, which is lower than in any other country, with the exception of Sweden, is considered the more serious, since our position in relation to other countries was already low before the war. France, which used to be held up in this country as the great example of the evil of a low birth rate, has a rate about the same as before the war, so that instead of being the lowest the rate is now above that of England, Norway, Sweden and Switzerland.

Traffic in Dangerous Drugs

The committee of the League of Nations on traffic in opium and other dangerous drugs has concluded its report for the session. It regrets that a large number of states have not ratified the convention. Illicit traffic, particularly during 1926-1929, has been found to have been on a more colossal scale than was suspected. A remarkable change was produced at the beginning of 1930 by putting in force the Geneva convention in the remaining European countries other than Turkey, and by bringing under full control the esters of morphine. In the years 1925-1930 some 30 tons of morphine was apparently available for illicit traffic in the form of esters or, possibly, of other drugs. Some 21 tons of morphine appeared to have been exported to the nonmanufacturing countries in excess of medical needs. At the moment when this grave situation appeared to have been remedied by the strict application of the Geneva convention of putting morphine esters under control by several countries, a new danger suddenly appeared in the form of the manufacture on a large scale of morphine and heroin in Turkey, which is not a member of the league or a party to the opium convention. The year 1930 was marked by a striking decrease in the manufacture and export of drugs in some of the chief manufacturing countries of Europe and by a notable decrease in seizures of drugs from these countries but by immense seizures of morphine and heroin, which in a number of cases were known to

have originated in Istanbul. But the committee notes with satisfaction the declaration of the Turkish representative that the Istanbul maritime authorities have received orders to verify exports. However, the committee holds that only the measures of control provided by the Geneva convention, particularly the import certificate system, will make possible the remedy of a state of affairs which is a menace to the whole world.

The Intravenous Use of Germicides

At a joint meeting of the sections of surgery and pathology of the Royal Society of Medicine, Mr. Zachary Cope opened an important discussion on the intravenous use of germicides. He included under germicides any substance that would kill germs, either directly when brought into contact with them or indirectly by unfavorably affecting their environment in the body. To be of value a germicide should have only a small toxic action on the body in the dose employed. Germicidal efficacy might be estimated in the test tube or in animals. The supreme test is the clinical effect in man. For example, arsphenamine is ten times as lethal to the Leishman-Donovan body in vitro as antimony and potassium tartrate but is no good for leishmaniasis, whereas antimony and potassium tartrate is a specific. Intravenous therapy has been more successful with protozoa than with bacteria, as shown in syphilis, frambesia, relapsing fever, dysentery and malaria. According to Professor Fleming, none of the ordinary antiseptics have a bactericidal effect in the blood stream. Intravenous arsphenamine has proved effectual in malignant pustule but useless for the septicemic form of anthrax. The treatment of bacterial diseases by intravenous injection is not on a sound foundation. Laboratory tests are doubtful and clinical results conflicting. Ethylhydrocupreine in pneumonia and 'Sinocrysin' in tuberculosis have proved disappointing and dangerous. For severe septic infections no reliable drug has been found. A good trial has been given both to mercurochrome-220 soluble and to the aniline dyes, but no one can continue to believe that antiseptics can have any direct effect on organisms in the blood stream except in a strength that would be poisonous to the patient. Any effect due to them must be indirect. Young of Baltimore is an enthusiast for mercurochrome, but others who have given it a fair trial have had nothing but failures.

Professor Fleming, bacteriologist in the inoculation department of St. Mary's Hospital, said that the bactericidal power of the blood was centered in the leukocytes, but that germicides damaged these more than they damaged bacteria. This applied to eosin, mercurochrome, flavine, gentian violet and 'Sinocrysin'. Although these results held out no hope of exerting a direct bactericidal action, high dilutions of arsphenamine, not in themselves bactericidal, appeared to increase the bactericidal power of the blood for *Streptococcus pyogenes*. This action he was unable to explain.

Outbreak of Paratyphoid Due to Infected Milk

An outbreak of paratyphoid (B) fever has occurred in Essex, near the eastern border of London. Between February 1 and 14 there were 172 cases. The illnesses in many cases were severe but only four cases proved fatal. Inquiries made by the ministry of health in conjunction with the local health officers appear to show that the outbreak was due to infection of the milk supply on a particular farm. The infections seem to have been introduced by one of the employees who, unknown to himself, was suffering from a mild attack of paratyphoid fever while at work and handling the milk for distribution. For several days milk thus infected was consumed by a considerable number of persons in the surrounding districts. At the farm in question all those suspected of possibly carrying the infection, including the man mentioned, have been removed to a hospital. The distribution of milk from the farm was stopped for the time necessary for thorough disinfection of the premises and utensils.

PARIS

(From Our Regular Correspondent)

Feb. 4, 1931

The Excess of Physicians

Dr. Cibrie, general secretary of the Confederation des syndicats médicaux français, has published an article describing conditions that make the practice of medicine in France more difficult and emphasizing that it is time to make serious efforts to divert young men from this difficult career. He points out that the minimal expenditure for the long years of study, for the practitioner of the most modest ambitions, is \$4,400 and that the amount reaches more than twice that sum if the graduate desires to prolong his studies and to take the various competitive examinations that lead to the modest positions in the medical schools or to posts on the medical staffs of hospitals. According to the census of 1928 there were 28,380 practicing physicians in France as compared with 16,480 in 1901, or an increase of 12,900 physicians for a population that has increased, during the interval, only by two million inhabitants. The number of students of medicine has increased from 8,779 in 1911 to 14,574 in 1929, and the trend is still upward. A committee has been appointed by the confederation to study the question of the excess of physicians and to devise the best means of remedying it. The committee, on which five professors are serving, addressed a circular letter to the professors of the medical schools in France. Eighty-six replies were received, which were almost unanimous in support of the following measures as a means of solving the problem. 1. For admission to the study of medicine, in addition to preparatory work in the sciences, preparatory courses in both Greek and Latin should be required. 2. Instruction in the natural sciences, physics and chemistry, the so-called premedical sciences, which is now given in the facultés des sciences, should be assigned to the facultés de médecine. 3. After the first months of medical studies properly so called, students who are manifestly unsuited for the study of medicine should be definitively eliminated. 4. Certain methods of instruction should be modified so as to make the student realize during his medical course, the principal performances of current medical practice. 5. The examinations should be made more severe and should be given twice a year on fixed dates with one or two written tests that do not bear the name of the student and that are submitted to a board of examiners not previously announced. These methods were applied to the schools of law, which were likewise overcrowded, and the number of students was reduced by 50 per cent with the result that some students who failed to secure admission to the schools of law were diverted to the schools of medicine. Finally, the committee demanded the prompt consideration of the bill filed in the chamber of deputies by Dr. Ambruster which provides for the elimination of the special favors that foreign students and physicians at present enjoy in the form of *équivalences* or advanced credits for examinations taken in their own countries together with the requirement that every foreign physician under 30 years of age desiring to practice medicine regularly in France be required to become naturalized when such physician has come from a country in which naturalization is required of French physicians desirous of practicing in that country. The *ex-favores* have been liberally accorded to foreign students in the past because it was assumed that they would return to their own countries to practice medicine after completing their studies in France. However, it has been observed that nearly all such foreigners, after securing their diploma under conditions that are not as severe as are required of French citizens settling in France. The percentage of foreign students in the facultés françaises has risen from 12 per cent in 1900 to 25 per cent in 1929 and increases the number of French physicians admitted to practice in foreign countries is almost nil. Furthermore, one cannot fail to recognize that the *ex-favores* physicians who are locating in France with the exception of a

few laboratory specialists are not of the best quality. In Paris, of ten medical scandals in which physicians are summoned before the courts, seven concern foreign physicians.

Responsibility of the Government for Misdemeanors of Mental Patients

The Conseil d'état rendered recently a decision that may have in the future serious consequences for its decisions have always the character of finality, as those of the supreme court, and in interpretations of existing laws establish the jurisprudence until some new law is enacted. A dangerous mental patient had been interned in the departmental psychopathic hospital of Basses-Alpes. The chief physician after a time, considered him cured and dismissed him. But the patient presented new signs of hyperexcitation and uttered grave threats against one of his neighbors. The mayor of the village informed the prefect of the department and requested that the patient be interned again. The prefect did not comply with the request of the mayor and one day the patient killed his neighbor. The widow and the daughter of the victim served notice on the government that they held it responsible for the death and claimed compensation. The minister of the interior did not reply but contented himself with transmitting the papers to the minister of public health, who also failed to reply considering that the minister of the interior was alone responsible for the acts of his prefects. The mother and daughter addressed themselves therefore to the Conseil d'état, which approved their claims and declared that the minister of the interior was responsible the mayor having taken promptly all the steps required by the regulations. The government will accordingly pay \$800 to the daughter of the victim and an annuity of \$120 to the widow during her lifetime. This decision is important. There are in the small villages of the rural districts many mental patients whom the mayor in spite of the recommendations of physicians, refuses to commit to a psychopathic hospital when they are indigent since, in that case, the cost of their stay in the hospital falls on their municipality. The physicians deliver to the mayor certificates of commitment but the mayors do not order the internment so long as the patient shows no signs of becoming violent. In the case cited, in which the Conseil d'état rendered a decision the mayor had done his duty. The prefect had failed to do his duty and the state is responsible for the acts of its prefects. As yet the responsibility of the chief physician of the hospital who had dismissed a mental patient who was still dangerous has not been brought up. That is however a frequent occurrence when the hospitals are crowded and room must be found for new patients. Some day perhaps a case will be brought before the courts to decide the question of the secondary responsibility of the government for the acts of the medical director of a public establishment. The tendency of present day legislation is to grant an individual damages for injuries that he suffers without being personally at fault.

Protection Against Toxic Gases

Before the Academy of Sciences Prof Charles Richet presented recently a communication from Mr Marseille in which the author brought out that no filtering apparatus will protect the wearer against the great variety of toxic gases at present known (there are more than a thousand). The only protection would consist in having the subject breathe in an elastic vessel isolated from the atmosphere in which the carbon dioxide is absorbed by an alkali and in which the oxygen is constantly renewed. The most toxic gases will then have no effect. Mr Marseille demonstrated an apparatus constructed on this principle.

Free Instruction for Abnormal Children

A curious case was tried recently before the tribunal de la Seine. There is in Paris a national institute for the education of deaf-mutes which is more than a hundred years old. The parents of the pupils are compelled to pay for the cost of their

education especially as they receive also board and lodging. This year, a number of parents got together and decided to refuse to pay the cost of the board of the pupils assigning as their reason that the law of June 16, 1881, provided for free compulsory education. The court decided naturally against the parents, for the parents are under no compulsion to place their deaf-mute in the Institut national des sourds-muets, they may keep him at home or they may place him in any public or private institution—whether free or subject to charges. The court merely expressed its regrets that there are not as yet a sufficient number of free institutions in which deaf and dumb children are fitted to associate with their fellow citizens on a normal intellectual basis. But the court declared that it was impossible for it to give to the law pertaining to free compulsory education an interpretation that was not intended.

Death of Prof Georges Weiss

The death of Prof Georges Weiss, honorary dean of the Faculté de médecine de Strasbourg, at the age of 72, was announced. Born at Bischwiller, Alsace in 1858, he left his home after the annexation of Alsace by Germany. He entered the Ecole polytechnique de Paris and obtained the degree of engineer of bridges and highways. He soon abandoned this career to take up medical studies and became associate professor and later professor of medical physics at the Faculté de médecine de Paris, in 1901 succeeding Professor Gariel. In 1907 he was chosen member of the Academy of Medicine and in 1918 he became dean of the Faculté de médecine de Strasbourg. His publications dealt chiefly with physiology, optics and electricity in relation to medicine.

BERLIN

(From Our Regular Correspondent)

Feb 2, 1931

The Down-Swing of a Charlatan

Zeileis the charlatan of Upper Austria, was widely known for his high frequency treatment that is to say, he held a high frequency tube aloft in his hand, the rays from which he held in the shortest space of time, many gullible followers. The maneuvers that he went through do not deserve at all the name of treatment but consisted merely in the waving of the sputtering tube over the heads of his patients as they marched past him. Nevertheless hotels sprang up in Zeileis small village almost over night while unheard-of crowds of patients flocked to see him. In spite of the existence of a law against charlatanism, the governor of the province made no move to check the shameful spectacle and it was whispered that the whole region round about drew too much profit from the pockets of Zeileis followers. Zeileis institutes were opened everywhere—in Austria, Czechoslovakia and Germany. Even physicians became directors of such institutes (this fact is referred to among the nature doctors and among the people as 'the crisis in medicine'). Fortunately, however, the "collapsus" failed, for the most part to make much money out of their ventures, for, it was alleged real benefit from the Zeileis treatment could come only from the Upper Austrian village of Gallsbach. An attempt was made—as so often—to combat the fraud by the publication of scientific articles but of course without success for the readers of the scientific articles are not the persons who go to the charlatan. These things must be viewed with something of the mind of the fatalist. Sooner or later the swindle will run its course. And, judging from newspaper accounts so it is with this fraud. As the zenith of prosperity was reached some time ago now the numerous hotels and shelters that sprang up are all empty. It is said that forty-two such buildings have gone into the hands of a receiver and are to be sold at auction. Apparently the down-swing began with the typhoid epidemic last summer. But the chief blow doubtless came from the many suits brought by the cured

patients before the Vienna courts. The persons whose health had been injured (not only by fraudulent treatment but still more by the loss of valuable time during which they might have had proper treatment) formed a committee to bring against Zeileis a joint suit for damages. Nothing is heard now of the Zeileis institutes in the various cities. What and who will be next?

The Number of Illegitimate Births

The absolute annual number of illegitimate births in Germany is more than 12 per cent lower than during the prewar period, but the proportion of illegitimate births to the total number of births in Germany is still 20 per cent higher than during the prewar period. The number of illegitimate births per thousand unmarried women is today less than during the prewar period and is constantly declining, in spite of the present large excess of women over men, in Germany. The illegitimate births are decreasing at nearly the same rate as the legitimate births, whereas, in many other countries, they are increasing. In Chile and Cuba the number of illegitimate children is very high, in Italy, England, the Netherlands, Switzerland and Norway, the percentage of illegitimate births is on the contrary, extremely low, in Germany and Austria, France, Ireland, Hungary, Sweden, Denmark and Spain, it is about the average for Europe and for years has not varied much.

New Forms of Gold Treatment

Injection therapy with gold has the disadvantage that occasionally, on account of too great toxicity of the compounds employed, undesirable secondary effects, more particularly exanthems, appear. It is, therefore, an important advance that now the action of this therapeutic remedy when administered orally has become known. Gold develops a catalytic action as one of the so called heavy metals. It accelerates oxidation in animal experiments and produces chemical changes. Freund, an assistant physician in the v. Bergmann Charitéklinik treated as he reported at a meeting of the Berliner Medizinische Gesellschaft, orally chronic infectious arthritis and chronic polyarthritis, in which a pathogenic connection with previous infections was to be assumed. Cases were selected more particularly that were refractory to treatment with salicylic acid, irritants and heat. During gold therapy no supporting measures are to be employed. There were a number of failures but nevertheless such a large number of controlled successes that already oral therapy as a method of treatment in general practice can be recommended, especially as no untoward instances of importance were observed. Occasionally during the beginning of the treatment focal reactions taking the form of increased pains in the joints, with some diarrhea appeared but disappeared again without any change in the mode of treatment. Film pictures were shown of patients who for a long time had been unable to work, some of them having been confined to bed. They show great improvement in the mobility of the joints while some have learned to walk again without a cane and have become able to work. As a rule the gold treatment was begun after fourteen days' stay in the hospital and always as the sole mode of treatment. The point of attack of the gold is the mesenchymal apparatus. In contrast with irritants by means of which a marked and sudden change of reactivity is brought about this preparation acts gradually by the oral route. The sulphur is not split off from these compounds.

A New Tuberculosis Hospital

The government hospitals and the university clinics have so few beds for hospital patients that they do not play any considerable part in the crusade against tuberculosis nor do they furnish any regular and adequate material for the clinical instruction of students. There are however a few tuberculosis hospitals in Germany, some of which have a large number of beds (the Sommerfeld Krankenhaus 400 beds, the newly erected Bechitz Krankenhaus 1 200 bed) but which have no connection

with the universities so that their patients cannot be utilized for scientific instruction. It is the merit of Albert Fraenkel, the Nestor of the tuberculosis specialists, that through the reconstruction of the 'Rohrbacher Schlosschen' near Heidelberg an institution has been created which makes possible the care of tuberculosis patients of all stages, which has likewise an aid fund, and which combines the practical treatment of tuberculosis patients with scientific research and clinical instruction. Fraenkel is doubtless correct in his assertion that the health centers alone cannot be expected to do adequate work in the crusade against tuberculosis. For the effective combating of tuberculosis internment of the advanced cases is needed and especially of the bacillus carriers, secondly a system of ferreting out early cases and the supervision of tuberculous patients by the physician during the remainder of their lives. The first demand is met by the tuberculosis hospital, the second by the welfare aid system. Only through close cooperation of the tuberculosis hospital and the welfare aid system is a crusade against tuberculosis that promises success at all possible. The Rohrbacher Schlosschen is a beautiful, well preserved structure and in its reconstructed form is a modern tuberculosis hospital with accommodations for about a hundred patients. Owing to the fact that not more than three patients occupy one room (there are also many single rooms), the hospital has more the character of a sanatorium, which is of the greatest importance for the mental well being of the patient. The institution has a close connection with the institutes of the University of Heidelberg.

Neuroses of Genital Origin

A recent session of the Verein für innere Medizin held in Berlin was devoted to the memory of its deceased honorary chairman Prof. Paul Fürbringer. The chairman, Professor His, discussed before the assembly the development of the theory of genital neuroses in males, a subject studied by Fürbringer for half a century. The disorder is mentioned by Hippocrates, although the modern treatment began in France in the fore part of the preceding century. Fürbringer's researches have great value owing to the detailed critical description of the symptoms. But with the interpretation it is different. From this angle modern research on the hormones and on the psychologic aspects of the subject have brought great progress. Privatdozent Dr. Kronfeld reported on these phases. He emphasized especially the value of studies on the personality of the subject and of the psychoanalytic method. The wavering self valuation of these patients, which points to an abnormal relation between the ego and the natural instincts as the nucleus of the neurosis can be pregnantly understood psychoanalytically from the history of the superego conceptions and the various phases in the development of the libido. From this fact it follows that psychotherapy is of greater value than endocrine treatment.

AUSTRALIA

(From Our Regular Correspondent)

Dec 30 1930

Medical Education in Australia

Owing to the many new medical subjects that require special attention it is becoming extraordinarily difficult to include in the present medical course of six years everything which should be taught. Was the opinion of Sir Richard Stawell who delivered the third Hildorf oration at the institute of anatomy at Canberra taking as his subject 'The Establishment of a Medical School and the Development of Medical Education.'

When medical education was first commenced at the Melbourne University the university council had determined that the curriculum for the degree of bachelor of medicine (M.P.) should consist of a five years course. This was longer by a year than any systematic course of medical education in the United Kingdom and Ireland. The university at the time this curriculum was drawn up was bitterly attacked but thirty

years later the British Medical Council insisted on the minimum of a five years' course in the United Kingdom.

Sir Richard Stawell traced the development of medicine in Australia and the changes that had been made in the university curriculums to keep pace with it. Experience in the United States, Great Britain and Germany had firmly convinced Sir Richard that the average Australian medical practitioner had a high standard of efficiency when compared with the standard of medical practice in other countries. He ascribed this to the better teaching in hospitals, where the senior students engaged in responsible work under proper control.

The Halford oration which was endowed by relatives of the late George Halford, founder of the first chair of medicine in the Melbourne University, is given each year.

Vital Statistics

At the end of 1929 the population of Australia reached the total of 6,414,372. The rate of growth during 1929 was 1.22 per cent and for the ten years 1.92 per cent which is probably the highest rate of increase in the world. Excess of births over deaths contributed 70.5 per cent of the total increase and net immigration 29.5 per cent. The density of population of Australia is only 2.16 persons per square mile and varies from one person per hundred square miles in the Northern Territory to 20.22 persons per square mile in Victoria.

The birth rate for 1929 20.31 per thousand of population, was the lowest ever recorded. Compared with many other countries the Australian rate is low but it is fortunately accompanied by a low death rate giving a rate of natural increase that is equaled in few countries. Extramural births numbered 4.70 per cent of all births registered. The proportion of multiple births is one case of twins in every 98 confinements and one of triplets in 14,242 confinements. The average number of children per mother was 2.96 against 2.99 in 1928.

During the year 60,857 deaths were registered corresponding to a rate of 9.55 per thousand of the population. This rate was slightly above the average of the previous five years but nevertheless compares most favorably with other countries. The principal causes of death were heart diseases, 15.3 per cent, cancer, 10.3 per cent, violence, 6.0 per cent, cerebral hemorrhage, 5.8 per cent, tuberculosis, 5.7 per cent, nephritis 5.6 per cent, pneumonia, 4.9 per cent. The number of deaths in childbirth was 5.1 per thousand children born. The infant mortality rate for Australia (deaths of children under the age of 12 months) per thousand children born was 51. This rate is the lowest ever recorded in Australia and is, with the exception of New Zealand, the lowest in the world. The rate for New Zealand is 34.

Health Week

The crystallizing of health education by means of a health week was carried out this year during the middle of November. This activity found its fullest expression in Melbourne and Sydney. In Melbourne there was a celebration of the fact that during last year the infant mortality rate there had been the lowest ever recorded. Health week was conducted under the auspices of the Health Association of Victoria. Mental hygiene was made a feature of the education but cleanliness, good living, wholesome food and effective control of infectious diseases were the general topics brought to the notice of the public.

Hospital Dietetics

As a result of the interest of Dr. Malcolm McEachern, who visited Australia in 1926, the authorities of the Alfred Hospital in Melbourne were enabled early this year to secure the services for twelve months of Miss Mabel G. Flanley, graduate in home economics of the University at Washington who took her dietitian's training at the Peter Bent Brigham Hospital, Boston. Commencing with a survey of hospital needs and conditions in Melbourne, Miss Flanley has impressed the hospital authorities with the increased efficiency and economy attendant

on the application of dietetic science to the feeding of hospital patients. Lectures to diabetic patients have been given regularly. By the standardization of methods of preparation of food, by approximating requisitions more closely to requirements, and by eliminating avoidable waste, a saving to the hospital (350 beds) of £268 during the last six months has been effected.

The dietitian's work has proved of such benefit that she has been asked to extend her visit. Her advice on the planning and equipment of new dietetic departments has been sought by the architects of four hospitals at present under construction in Victoria.

The new kitchen at the Alfred Hospital is to be used as a teaching laboratory for hospital dietitians. It is intended to have two students and two assistants working under the director. The training period will be six months and among applicants for students preference will be given to those having the degree of bachelor of science or those who have taken a course in domestic economy and institutional management.

Poliomyelitis in Victoria

For the past four years, the health department of the Melbourne city council has been conducting a campaign against infantile paralysis. Recently, the other city and municipal councils have shared the expense of the campaign. Under the control of a medical director, human serum has been obtained from recovered patients placed in ampules at the Commonwealth Serum Laboratories and held in cold storage at Melbourne. Lately it has also been stocked at twelve centers in the country districts of the state. The total cost of the campaign activities last year was £1,000, of which the Victorian government contributed half. In many instances, prompt diagnosis and early treatment had minimized the extent of the paralysis and the campaign will be continued. Action is being taken in Sydney to provide similar serum treatment.

The "Outback Child" Problem

In New South Wales and Queensland the bulk of the population live along the seaboard, and the inland areas (known locally as the far west) are sparsely populated, the land being used mainly for sheep and cattle grazing. The problem of providing medical and dental services for the children of these areas is one that is exercising medical administrators and charitable associations in Australia. In the far west the medical situation is further complicated by a high incidence of trachoma. Dust, flies and malnutrition are contributing causes to this high incidence.

In providing medical services for these children, school medical inspection, the traveling dental clinic, the child welfare clinic, the Queensland ambulance service (considered to be one of the most efficient in the world), various inland missions, the flying doctor and the bush nursing society all do their magnificent part but even so, limitations of time, distance and finance make the problem inherently difficult. The dental clinics of the education department in New South Wales, for instance, are continually traveling and yet they can visit each place only once every three years. Subsidiary methods of providing services necessitate bringing the children to the centers of population.

In Queensland the country women's association has organized seaside homes for the accommodation of batches of outback children. The education department of Queensland has established an ophthalmic hostel for the concurrent general education and treatment of the worst cases of trachoma. In New South Wales is a movement called the "far west children's health scheme" organized by the national council of women. The first effort was a seaside camp where special facilities were provided for medical and dental treatment, such as removal of tonsils and dental attention. Every child is chosen from among hundreds of needy cases by a physician or

a schoolmaster. The child must not only be in need of treatment but must also belong to parents who could not possibly procure help in any other way.

A more recent development of the far west children's health scheme is the appointment of a skilled orthopedic surgeon to travel to country centers to examine and advise on the possibilities of treatment of crippled children who would be selected and assembled by local physicians or schoolmasters. The cases suitable for treatment would then be sent to the state capital.

One of the most recent developments is the airplane ambulance. By this means patients can be transported long distances with comfort, one such patient, with a fractured spine was brought 1,000 miles from central Queensland to the state capital for operation. In some of the far western towns the local physicians, when bad weather makes the roads impassable do their country rounds by airplane taxi at a cost of 2 shillings (40 cents) a mile.

JAPAN

(From Our Regular Correspondent)

Feb 2, 1931

Fewer Women than Men in Japan

The general census taken Oct. 1, 1930, in this country was successful and the result was published by the government December 8. The population of Japan proper is 64,447,724 comprising 32,388,369 males and 32,059,355 females, which is nearly double the population in 1872, fifty-nine years ago. According to the Committee for the Investigation of Population and Food Problems, it is estimated that the population of Japan proper will grow to almost 90,340,000 in the next thirty years. The committee, which has handed the draft of its report to the prime minister, points out (1) the necessity of establishing medical consultations for marriages, births and birth control, and (2) the necessity of investigation and research on the facilities of Japan from a eugenic point of view. It also proposed the organization of a permanent committee for the purpose. As to the population, it is strange to find that the number of males exceeds by 329,014 the number of females, 101 males to 100 females. Tokyo has the highest ratio of males to females, 111.9 to 100, next comes Hokkaido, 109.3 then Osaka 108.9. In large cities and the mining and planting districts the number of males is greater, while females are more numerous in places with many spinning factories. The smaller number of females is said to be due to the fact that many females die young. Dr. T. Nagai, specialist on problems of population, has published his opinion that Japanese mothers are apt to have another baby soon after they have lost their children. On this occasion of the census, he hopes, the people at large will seriously consider the problem of population.

The Birth Control Union

The organization of the birth control union in which Dr. Miyajima, member of the Tokyo municipal assembly, has long taken the initiative has been realized at last. About 200 members met, January 17 for the first time in the Tokyo Physicians Building at Kanda, Tokyo, under the presidency of Baroness Ishimoto. They decided that 1. The union shall join in and be affiliated with the International Birth Control Union. 2. The union shall investigate various studies on birth control and make reports of them. 3. The union shall publish opinions in defense against irrational attacks and opinions attacking birth control methods or establishments which are found to be unscientific.

Rockefeller Offers Japan a School of Hygiene and Public Health

Dr. Heiser of the Rockefeller Foundation arrived November 2 at Yokohama on his way to China. He visited Tokyo to see Mr. Adachi, home minister. Mr. Akagi, chief of the sanitary bureau and Dr. Teusler, chief of St. Luke's International Hospital concerning the establishment of a new school of hygiene and public health in Tokyo. After the arrival of Dr. Grand

of the same foundation, whose mission was to choose scholarships for young men of medical science or engineering at the Rockefeller Institute in America, the two negotiated with Dr. Miyajima and then officially offered to our government a large sum of money annually for the establishment of the new school.

The home minister, who was glad to receive the generous offer, nominated the following special committee for organization: November 9 advisers, Dr. Hayashi, dean of the medical department of the Tokyo Imperial University, Dr. Kitajima, dean of the Keio Medical College, and Dr. Teusler, chief of St. Luke's International Hospital, chairman. Mr. Akagi, chief of the sanitary bureau, commissioners Drs. Nagayo and Miyagawa of the Imperial University of Tokyo and the government institute for the study of infectious diseases, Drs. Miyajima and Hatai of the Keio Medical College and the Kitasato Institute, Dr. Sato of St. Luke's International Hospital, and Drs. Kusama and Noheji of the sanitary bureau of the home ministry. They met in the home ministry several times beginning December 4 and on the 11th, Dr. Grand, who had come back from China, attended the meeting. General plans were made as follows: the expenditure for the school building \$5,000,000, the school term two years, qualifications to enter the school, qualified physicians, obligations of the graduates, to go out into practical work in factories and schools, other establishments, to organize health centers in cities and villages. On the evening of the 12th, the Rockefeller Institution Alumni Association in Tokyo gave a dinner in honor of Dr. Grand, who was going again to China on the 14th.

Women's Pharmaceutic Colleges Licensed

Legal licenses have been given by the educational department to the Kyoritsu Women's Pharmaceutic College, which opened in April, 1930, the Tokyo Women's Pharmaceutic College, which opened in November, 1930 and the Showa Women's Pharmaceutic College, which opened in November, 1930.

Examination for Licensing Medical Practitioners

In the state examination held for the medical practitioners toward the end of last year (1930), the following four foreign physicians were licensed out of twenty-seven candidates for medical practice and twenty-eight for pharmaceutic physicians and pharmacutists: Dr. T. F. Rowy, United States, Dr. H. E. Boles, United States, and Dr. T. Schmidt, Germany, physician. Dr. Visura Nias, India. The examination, which used to be held in July and December, is now held once a year.

Fellows of the League of Nations

On the recommendation of Dr. Tsurumi, the Health Section of the League of Nations has granted fellowships to three Japanese scholars. They left here at the end of 1930 to stay in Geneva for two or three years. Dr. Humano chiefly will investigate the disposal of sewage and improvement in villages. Dr. Yotai will pursue studies in bacteriology, and Dr. Abe in social hygiene.

Meetings of Societies

The Japan Racial Hygiene Society, which was long promoted chiefly by Dr. Nagai, professor of eugenics in the medical department of the Tokyo Imperial University, has been organized under the presidency of Viscount Toki. The opening ceremony was held in the Municipal Hall at Hibuya Park November 30. After the addresses of the minister of home and education, lectures were given by Dr. Miyake and five other celebrated men of sciences.

The Tokyo Prefectural Sanitary Authorities gave lectures to school sanitarians in towns in the neighborhood of Tokyo in December, on prevention of infectious diseases in schools and the nursing of school children. The Kumamoto Medical College also gave a course of lectures on school hygiene for four days, December 8-11, about 400 school masters, teachers and school nurses attended.

Personal Items

Dr C Yokote, professor of hygienics in the Tokyo Imperial University, has retired having reached the age limit. Dr Mochizuki died at the age of 72, November 29. He was formerly principal of the Kyoto Medical College. Dr Inoue, professor of anatomy to the Tokyo Imperial University, who left May 1 last year to attend the hundred and twenty-fifth anniversary of the Krasa University, Krasn, Russia, returned to Tokyo October 3. He is reported to have been treated as a guest of the nation in Russia and had the honor to make an address before the students of the university and the citizens at the reception May 15. On the day of the celebration he delivered a lecture on "Development of the Palate." After that he went to Amsterdam to attend the third International Anatomy Meeting, August 4, as delegate from Japan.

NETHERLANDS

(From Our Regular Correspondent)

Jan 21, 1931

Government Health Insurance

The law pertaining to sickness, as revised under date of June 14, 1929 provides for the granting of cash benefits in case of sickness and constitutes a form of compulsory insurance. A person insured under this law is entitled, in case of sickness, to sick benefits, which may not exceed 8 florins (\$3.20) a day. However, an insured person has no claim to sick benefits if (1) the sickness is the result of an accident covered by the law pertaining to accidents, or (2) the sickness is the result of intention, a misdemeanor or immorality. Married women during pregnancy and confinement are regarded as patients. The law does not define the term 'sickness' but considers that sickness obtains if a person is unable to work and requires medical treatment.

In Memory of Prof Dr Christiaan Eijkman

Prof Dr Christiaan Eijkman, Nobel prize winner in physiology and medicine, passed away at Amsterdam, November 5. He was appointed health officer following the publication of his treatise on "Polarization in the Nerves," and soon afterward undertook his first voyage to the East Indies. On a second voyage he was a member of the commission on beriberi, which was under the direction of Pelchering and Winkler. On his return from that voyage he was appointed professor of hygiene, medical police control and legal medicine at the University of Utrecht. In his articles he dealt with a great number of subjects pertaining to colonial medicine. He pointed out that, in the East Indies, Europeans do not suffer from anemia, their temperature is not increased and their nutritive and physiologic exchanges are the same as here in Europe and do not differ in any respect from the manifestations in the natives. It is superfluous to do more than mention the enormous influence of his work on beriberi to him belongs the honor of having created the science of vitamins. Aside from his eminence in physiology, Professor Eijkman showed himself to be a no less remarkable bacteriologist to cite his researches on the functions of bacteria and on the conditions of growth and death of ferments, which interested him more than the study of pathogenic bacteria.

Malaria in the Netherlands

The report of the malaria commission of the council of health for the years 1927-1928 notes that the work of the commission has shed light on the autumnal infections that are highly latent. The investigations of Swellengrebel, during the period 1920-1923, on the natural infection of *Anopheles* established that it is encountered in autumn in *Anopheles* found in houses. This had the effect of giving different directions to the crusade against malaria by substituting for the destruction of *Anopheles* the destruction of the mosquitoes in the houses, especially during the autumn season.

Dr P C Korteweg studied the frequency of recurrences the following year in persons who were infected with malaria before, and also in those who were infected after, September 1. Of 1,108 persons infected before September 1, there was 128 per cent of recurrences during the following year. In 170 who were infected after September 1, there was 40.6 per cent of recurrences. Experiments were made with marked mosquitoes, which reveal that *Anopheles* may be recovered 3,000 meters from the point where they were released.

According to the researches of Van Thiel, Van Swellengrebel and De Buck it seems likely that two species must be incriminated that can be distinguished only by the length of their wings. The two species may become infected with malaria, but it may be noted that it is *Anopheles* with short wings that produces the infection of the autumn season, and since the autumnal infections prepare the way for the worst infections of the following spring, the problem of anophelism without malaria is partly explained. As to *Anopheles* with short wings, the brackish water appears to attract them more than the other species.

Increase in Height of Hollanders

In the review *Mensch en Maatschappij*, Prof J P Van den Broek publishes an article concerning the increase in the height of Hollanders. He concludes from his study of statistics that: 1 The average height of man in the Netherlands is 1.72 meter. 2 After Sweden, Norway and Scotland, the height of man in the Netherlands is the greatest of any country. 3 The average height is greatest in Friesland, Groningen and northern Netherlands, and the least in Limburg and North Brabant. 4 The increase in height is a world wide phenomenon. It is sometimes said that the increase is due to the greater wealth and comfort that have resulted from the absence of alcoholism, but to this assumption certain objections may be raised. This increase in growth has been going on for sixty years. The increase in all parts of the Netherlands is uniform, and the same increase is noted outside the Netherlands.

Honorary Degrees Conferred

Prof V Zeeman has been awarded the degree of doctor honoris causa by the Faculté des sciences of the University of Paris, and Prof H Zwaardemaker has received the same honorary title from the Faculté de médecine of the same institution. The doctorate honoris causa of the Sorbonne was conferred at this time on five scientists—one for each of the five faculties. That two of the five awards should have fallen to the Netherlands is a source of gratification. France is a country of broad general views, of clear thinking and precise forms. For that reason, a distinction of this kind has a peculiar significance.

Blood Transfusion Service Organized

A blood transfusion service has been organized at Rotterdam by the Red Cross. Any physician may send in an urgent request for a blood donor. The creation of the service has been widely advertised in order that it may be of aid when one searches in vain for a suitable donor among the members of the family, the friends and the acquaintances of the patient.

Marriages

MORTIMER BYRON DOWNER JR Woodstock N Y, to Miss Carol Sophia Hallstrom of Flushing January 24.

WILLIAM JAMES FAGALY, Lawrenceburg, Ind, to Miss Dorothy Rae Wheeler in East Warsaw, January 15.

WILLIAMSON ZIGLER BRADFORD to Miss Mary Coley Spier, both of Charlotte N C, January 6.

ROBERT M WARE to Miss Sarah Pollard both of Fitzgerald Ga in Lale City Fla January 6.

BERT M BREWSTER Fieldon Ill, to Mrs Beatrice Johnson in St Louis January 16.

Deaths

Edward Eliot Harris * New York Medical Department of the University of the City of New York, 1880, member of the House of Delegates of the American Medical Association 1902-1906, 1917-1927, for many years speaker of the house of delegates of the Medical Society of the State of New York, professor of physiology and hygiene in Rutgers College, 1881-1885, assistant to the chair of physiology and histology, 1881-1883, instructor in the laboratory of biology and pathology 1882-1884, at his alma mater, inspector for contagious diseases New York Board of Health, 1882-1886, on the staff of the New York Children's Hospital, Randall's Island, aged 74, died, February 25

Ernest Catron Wheeler * Tacoma Wash., Chicago Homeopathic Medical College, 1897 Rush Medical College Chicago, 1899 member of the American Academy of Ophthalmology and Otolaryngology and the Pacific Coast Otolaryngological Society, served during the World War aged 58 died January 21 in the Tacoma General Hospital, of paralytic ileus, following an operation for obstruction of the small intestine

Samuel T Earle, Jr * Baltimore University of Maryland School of Medicine Baltimore, 1870, formerly professor of physiology and diseases of the rectum, Baltimore Medical College, member of the American College of Surgeons past president of the American Proctologic Society and the Medical and Chirurgical Faculty of Maryland aged 82 died suddenly February 19, in the Union Memorial Hospital, of angina pectoris

Tinsley Brown * Hamilton Mo., Missouri Medical College, St. Louis 1876 past president of the Missouri State Medical Association, secretary and formerly mayor of Hamilton postmaster and member of the school board past president of the Caldwell County Medical Society, aged 81, died, February 9 of cerebral hemorrhage

Frederick Albert Bardwell, Oteen, N. C. New York Homeopathic Medical College and Hospital 1893 Harvard University Medical School Boston, 1901 member of the Massachusetts Medical Society on the staff of the U. S. Veterans' Hospital number 60, aged 66, died, February 15 of coronary thrombosis

Guy Harrison McFall, Detroit Detroit College of Medicine 1899 assistant professor of rhinology laryngology and otology at his alma mater on the staffs of the Herman Kiefer Hospital and the Children's Free Hospital aged 54, died, February 20 in the Jennings Hospital, of pneumonia

George W Brose, York, Pa. Hahnemann Medical College and Hospital of Philadelphia 1891 member of the Medical Society of the State of Pennsylvania, on the staff of the Danville (Pa.) State Hospital aged 68, died February 6 of hypertrophy of the prostate and chronic nephritis

Frederick Charles Keck, San Francisco Cooper Medical College, San Francisco 1894 member of the California Medical Association formerly professor of electrotherapeutics College of Physicians and Surgeons of San Francisco aged 66, died, February 16 of pneumonia

Frank Raymond Stubbs * Newton Mass. Harvard University Medical School, Boston 1897 formerly instructor of histology at his alma mater aged 59 on the staff of the Newton Hospital where he died, February 9 of cardiac decompensation and pulmonary edema

Charles Edward Abbott, Andover Mass. Harvard University Medical School, Boston 1881 member of the Massachusetts Medical Society formerly member of the state legislature aged 74 died January 25, of arteriosclerosis and cerebral hemorrhage

John Vance Lauderdale * Major U. S. Army retired Brooklyn Medical Department of the University of the City of New York 1862 entered the Army as an assistant surgeon in 1867 and retired in 1896 for physical disability aged 68 died January 22

Harold Alexander Patterson New York University of Buffalo School of Medicine 1917 member of the American College of Physicians on the staff of the Manhattan State Hospital Wards Island, aged 36 died, February 17 of cerebral hemorrhage

Charles Sewell Barrell Boston Harvard University Medical School, 1900 member of the Massachusetts Medical

Society aged 63 died February 16 in the Massachusetts General Hospital, of cerebral hemorrhage, arteriosclerosis and myocarditis

William Alexander Brittin, Virden, Ill. Marion-Sims College of Medicine St. Louis 1895 member of the Illinois State Medical Society aged 64 died, February 11, in St. John's Hospital, Springfield, following gangrene and amputation of his leg

Howard A Hanaford * Newport, N. H. Baltimore Medical College 1900 past president of the Sullivan County Medical Society on the staff of the Carrie F. Wright Memorial Hospital aged 55, died February 9, of meningitis following influenza

Henry Alston Killion, Portageville, Mo., University of the South Medical Department Sewanee, Tenn. 1901 Barnes Medical College, St. Louis 1904, University of Nashville Medical Department, 1904, formerly mayor, aged 49, died, in February

Ralph Robert Charlesworth, Wildwood N. J., Jefferson Medical College of Philadelphia, 1904 served during the World War on the staff of the Millville (N. J.) Hospital aged 50 died, February 12 in the Jefferson Hospital, of cirrhosis of the liver

Duncan Williamson Blake, Sr, Gloucester City, N. J. Jefferson Medical College of Philadelphia, 1876 Civil War veteran formerly coroner president of the board of health and member of the board of education, aged 82 died January 28

William S Glenn, Sr, State College, Pa., Eclectic Medical Institute, Cincinnati 1883, for many years a member of the school board aged 72 died in January, in the Jefferson Hospital, Philadelphia, of chronic nephritis and cerebral hemorrhage

Robert Eugene Barker, Kansas City Kan., Kansas City Medical College 1900 member of the Kansas Medical Society aged 56 died, February 17 in the Bethany Hospital of acute dilatation of the heart following an operation for gallstones

Charles Henry Schenk, Lagrange Ind. Curtis Physio Medical Institute Marion, 1894 member of the Indiana State Medical Association served during the World War, aged 60 died, February 5, of carcinoma of the stomach

Edwin M Hollingsworth, Mount Airy N. C. College of Physicians and Surgeons Baltimore, 1886 member of the Medical Society of the State of North Carolina aged 65, died, February 10 of a self-inflicted bullet wound

Edwin Whittier York * Newark N. J. University and Bellevue Hospital Medical College 1917 proprietor of the Newark Hospital aged 37 died February 13 of cerebral hemorrhage nephritis and hypertension

Lemuel Arthur Bassett, Boone, Iowa Rush Medical College Chicago 1896 member of the Iowa State Medical Society on the staff of the Elanor Moore Hospital, aged 63, died February 7, of angina pectoris

Inez Ford Nason, Dover N. H. Woman's Medical College of Pennsylvania Philadelphia 1890 member of the New Hampshire Medical Society aged 66, died January 15, in Bradiord Vt. of heart disease

John Valentine Fisher, Philadelphia University of Pennsylvania School of Medicine Philadelphia 1886 member of the Medical Society of the State of Pennsylvania aged 78 died February 13, of heart disease

William Granville Sykes, Aberdeen Miss. Medical Department of the University of the City of New York 1870 Confederate veteran formerly member of the state legislature aged 85 died January 18

Hugh Angus Macaulay * Waverly Mass. University of Louisville (Ky.) School of Medicine 1908 past president and secretary of the Burke County Medical Society aged 45 died February 4 of pneumonia

John Donovan Weibel Pittsburgh Vanderbilt University School of Medicine Nashville Tenn. 1909 aged 26 intern at the Mercy Hospital where he died February 17 following an operation for appendicitis

Archibald J McKillop, Wolverine Mich. Medical Department of the University of Wooster Cleveland 1887 member of the Michigan State Medical Society aged 67, died February 4 of heart disease

Robert Edward Webster Marland Ont. Canada McGill University Faculty of Medicine Montreal Que. 1891 member of the American College of Surgeons aged 60 died February 9 in San Diego, Calif.

Louise Forbes Ferro, San Bernardino, Calif (licensed by the Minnesota State Board of Medical Examiners, year unknown), aged 87, died, February 2, of myocarditis and arteriosclerosis

Pearl Mary Foster Bigelow, Utica, N Y, Syracuse University College of Medicine, 1903, aged 52, died, Dec 27, 1930 in the Utica State Hospital, of cerebral arteriosclerosis and chronic nephritis

Edwin A Mendell, St Joseph Mo, Cotner University Medical Department, Lincoln, Neb, 1892, member of the Missouri State Medical Association, aged 69, died, January 14, of carcinoma

Jefferson Cawood Newman, National Soldiers Home, Va Tennessee Medical College Knoxville 1892 on the staff of the National Soldiers Home, aged 59, died, February 8, of heart disease

Angelo Audi, Union City, N J Royal University of Turin Faculty of Medicine and Surgery, Turin, Italy, 1903, aged 52 died January 25, of carcinoma of the rectum and cerebral hemorrhage

Charles Bartels, New York Medical Department of Columbia College New York 1888 member of the Medical Society of the State of New York, died, January 7, of chronic myocarditis

William C Dewberry, Pensacola Fla, Medical College of Alabama, Mobile 1891 member of the Florida Medical Association also a druggist, aged 64, died, January 25, of pneumonia

James Clark McGuire, Washington D C, Medical Department of Columbian University Washington, D C 1879 aged 78, died, January 21, of coronary thrombosis and arteriosclerosis

Herbert Daniel Burnham * New York, Medical Department of the University of the City of New York 1889 aged 72, died, February 3, of chronic nephritis, uremia and endocarditis

Maurice Barret Pearlstien * Brooklyn Eclectic Medical College of the City of New York, 1889 on the staff of the Univ Hospital aged 54, died, January 11, of angina pectoris

W F McCurdy, Weston, Ga, Atlanta Medical College, 1884, member of the Medical Association of Georgia formerly mayor of Richland, aged 71 died February 6 of pneumonia

George Andrew King, Kansas City, Mo Rush Medical College, Chicago, 1904 aged 53, died, January 29, in the Wesley Hospital, of cirrhosis of the liver and myocarditis

Andrew Allison O'Daniel, Wildwood, N J, Jefferson Medical College of Philadelphia 1884, served during the World War aged 67, died, January 25, of cerebral hemorrhage

Edmund Scott Dow, Boston, Harvard University Medical School Boston 1887 member of the Massachusetts Medical Society aged 69, died, February 6, of lobar pneumonia

Walter Brooks Hughes, Newport Ky, Eclectic Medical Institute, Cincinnati 1914 served during the World War, county coroner, aged 38, died, February 6, of influenza

Lyman Austin Crim, Indianapolis, Indiana Medical College, Indianapolis, 1878, formerly a druggist aged 78, died, February 5 of angina pectoris and chronic myocarditis

Cora Turner Saxe * Seattle, University of Michigan Medical School, Ann Arbor, 1886, aged 71 died, January 31, of chronic myocarditis following a cholecystectomy

Louis W Palmer, Pentwater, Mich, Kentucky School of Medicine, Louisville 1877, veteran of the Spanish-American War, aged 73, died February 8, of heart disease

George L Fox, Linden, Md Medical Department of Columbian University Washington, D C, 1885 aged 74, died, January 14 of pyelonephritis, uremia and cystitis

James Curtis Watts * Rome, Ga, Eclectic Medical Institute, Cincinnati, 1881, on the staff of the McGill Hospital, aged 70 died February 3 of coronary thrombosis

Thomas Alphonsus Wallace, New York Medical Department of the University of the City of New York 1893, aged 65 died Nov 10 1930 of chronic myocarditis

Joseph Moses Ward Kitchen, East Orange N J Medical Department of Columbia College New York 1881 aged 84 died February 3, of hypostatic pneumonia

John Stennis Adams, Sumrall, Miss, University of Nashville Medical Department 1901 aged 52, died in February, in a hospital at Hattiesburg, of pneumonia

Anna Belle Davis Parker, Gilmanton N H, Boston University School of Medicine, 1898, aged 61, died, February 10 in Worcester, Mass, of heart disease

George Sherman Blake, Rockville, Ind, Bellevue Hospital Medical College, 1892, aged 66, died, January 30, in Tempe, Ariz, of ruptured gallbladder

George C Holland, Dallas, N C, Baltimore University School of Medicine, 1890, formerly mayor of Bluefield, W Va, aged 66, died February 4, of uremia

William C McNeal, Hoehne, Colo, Jefferson School of Medicine, Louisville, 1882, aged 76, died, January 12, in a hospital at Trinidad, of pneumonia

Thomas Baird Allison, Tarentum, Pa, Western Pennsylvania Medical College, Pittsburgh, 1896, aged 69, died, Dec 11, 1930, of acute myocarditis

John H Young, Burkeville Va, Southern Medical College, Atlanta 1882, member of the Medical Society of Virginia, aged 71, died, Dec 22 1930

Carl Orth, St Louis St Louis College of Physicians and Surgeons, 1891, aged 67, died, February 15, in the Deaconess Hospital, of pneumonia

Samuel Joseph Chesnut, Bambridge, Ga, University of Maryland School of Medicine, Baltimore, 1892, aged 68, died, February 10, of uremia

B F Hancock, Nashville Ark, Medical Department, University of Tennessee, 1881, aged 76, was found dead, January 20 of heart disease

Marcus M Rhoades, Graham, Mo, St Louis Medical College, 1868, Civil War veteran, aged 90, died, January 16 of arteriosclerosis

George Lewis Guthrie, Madison, Ind, Medical College of Indiana, Indianapolis, 1900, aged 53, died, February 12, of heart disease

Charles Lorain Harrod, Indianapolis, Medical Department University of Tennessee, 1893, aged 67, died, January 23, of heart disease

John James Irven, Montreal, Que, Canada, McGill University Faculty of Medicine, Montreal, 1911, aged 43, died, Dec 6, 1930

C B Baird, Sharon, Tenn, Vanderbilt University School of Medicine, Nashville, 1886, aged 66, died, January 24, of pneumonia

William J Bryan, Valhalla, N Y, Eclectic Medical College of the City of New York, 1879, aged 72, died, February 9, of senility

Sophia C Davis, Augusta, Ga Georgia College of Eclectic Medicine and Surgery, Atlanta, 1894, aged 80, died, January 16, of senility

Nicholas I Scott, Norwood Ohio Medical College of Ohio, Cincinnati, 1881, aged 79, died, February 12, of diabetes mellitus

Oliver P Branson, Wichita Kan American Medical College, St Louis, 1895, aged 76, died, February 5, of heart disease

William A Ewing, Washington, Okla, University of Louisville (Ky) School of Medicine, 1893, aged 68, died, Dec 12, 1930

John James Carroll * Naugatuck, Conn, Dartmouth Medical School, Hanover, N H, 1897, aged 72, died Dec 17, 1930

Robert X Wade, Coyle Okla (licensed, Oklahoma, under the Act of 1908), aged 75, died, Dec 29, 1930, of lobar pneumonia

Edward John Free, Campbellford, Ont, Canada, Victoria University Medical Department, 1887, aged 71, died, Nov 16, 1930

Daniel B Taylor, Gary, Ind Meharry Medical College, Nashville, Tenn, 1903, aged 51, died, January 27, of pneumonia

Ammi Sibley Nichols, Portland, Ore Hahnemann Medical College of Philadelphia, 1876, aged 77, died, January 23

William N Tate, Mebane, N C, Louisville (Ky) Medical College 1875 aged 85, died January 26, of arthritis

Thomas A Cook, Democrat, Ky, Louisville Medical College 1893 aged 65, died January 30 of appendicitis

Jay C Norris, Birmingham, Iowa (licensed, Iowa, 1887), aged 75, died, February 7

Bureau of Investigation

SCAR-POX

An Alleged Cure for Smallpox and Scarlet Fever

State and local health officials from Michigan to California have received a form-letter coming from the White Laboratories of Chicago, offering to send on request a free trial treatment of "Scar-Pox." Among the claims made for Scar-Pox in the letter just referred to are these:

Scar-Pox, the new and guaranteed remedy for scarlet fever or smallpox.

Scar-Pox is the tested remedy for the cure of either dread disease scarlet fever or smallpox.

It is a vegetable compound absolutely pure.

It is guaranteed by the makers to absolutely cure either scarlet fever or smallpox in three days when used as directed.

The White Laboratories, according to the letterhead are "Manufacturing Chemists" and are the Sole Makers of Scar-Pox. The letters sent out by the White Laboratories are signed "J. White." The address given is 309 South LaSalle Street Chicago. The Chicago telephone directory does not contain the name of these manufacturing chemists—the White Laboratories. A visit to 309 South LaSalle Street also disclosed the fact that the White Laboratories are not listed in the office directory of that building. Neither did the men who operated the elevators of the building know where the White Laboratories could be found. A visit was made however to a large, and not too prepossessing office in this building housing according to the names on the door, the "All Trades Employment Bureau" and the "Chicago Garage Owners Exchange." Inquiry for the persons who represented the "White Laboratories" brought out from one of the partitioned departments, Mr. White.

The representative of the Bureau of Investigation told Mr. White that a number of inquiries were being received regarding his product, Scar-Pox, and Mr. White was asked whether he was willing to give any information regarding his product so that such questions might in the future, be answered more satisfactorily. Mr. White was not willing. He did make some vague statements to the effect that Scar-Pox was a preparation that had been originated by a German. When asked whether the product had ever been tested in the United States, Mr. White said that it had, on three cases in California and one case in Chicago—in both instances, apparently, under his rather than medical auspices. On the matter of composition, Mr. White was as noninformative as the average patent medicine label. When asked where the White Laboratories were located, Mr. White stated that they were at his home.

The circular letter already referred to offered to send to any health department or board of health one regular pint size of Scar-Pox for a test. Accompanying the circular letter was a return postcard. Those health officials who filled out the return card received in due time a pint bottle of Scar-Pox. The label on the bottle carried, in addition to directions, the following "Notice":

Scar-Pox is an internal medicine and is to be used internally only. It is not a toxin or a preventative and should be used only when either disease scarlet fever or smallpox is actually contracted. It contains no narcotics of any kind alcohol or injurious drugs. SHAKE WELL BEFORE USING.

The patient with smallpox was directed by the label to drink half a glassful twice daily till relieved. According to the same label one bottle of Scar-Pox was sufficient for most cases. The directions further stated that in the smallpox sufferer was unconscious or helpless forced drinking is advisable. The only other information of interest on the label was the statement that this bottle of Scar-Pox was sold at \$15.

In addition to the bottle of Scar-Pox that the health officials received, there came a follow up letter to the effect that should the official desire to reorder shipments would be made the same day as the order was received and that the prices would be \$15 a pint or \$150 for a case of twelve pints. A postcard would be sent by air mail for \$2.75 additional to any part of the United States.

Some unopened, original bottles of Scar-Pox were submitted by the Bureau of Investigation to the A. M. A. Chemical Laboratory for analysis. The chemists' report follows:

LABORATORY REPORT

"Some original bottles of 'Scar-Pox' (White Laboratories Manufacturing Chemists, 309 South LaSalle Street Chicago U. S. A.) were submitted to the A. M. A. Chemical Laboratory by the Bureau of Investigation for examination. The bottles contained an average of 450 cc. (approximately 15 fluid ounces) each of a colorless liquid with some suspended material having a slightly stale odor and an acidulous taste. The reaction of the mixture to litmus was decidedly acid. No statement as to the composition was given on the label.

Qualitative tests indicated the presence of potassium, tartrate traces of chloride and sulphate, water, a substance precipitable by alcohol suggestive of potassium acid tartrate (more commonly known as cream of tartar). Heavy metals and alkalis were not found.

The specific gravity at 20 C was 1.002. The total solids were found to be 0.67 per cent, consisting essentially of small colorless rhombic crystals (responding to tests for potassium acid tartrate). This amount of potassium acid tartrate was also indicated by titration. The amount of water by difference was found to be 99.33 per cent.

From the foregoing tests it is concluded that Scar-Pox is essentially a saturated aqueous solution of commercial cream of tartar (about 0.6 Gm. in 100 cc.).

Summed up then, it is evident that this "new and guaranteed remedy for scarlet fever or smallpox" that is guaranteed by the makers to absolutely cure either scarlet fever or smallpox in three days is nothing more than cream of tartar in water. Less than one half cent's worth of cream of tartar in a short pint of water selling for \$15! One of the most astounding features of modern civilization is the fact, verified daily that any person however ignorant of medicine or pharmacy, can put up the most fantastically worthless mixtures and sell them as 'cures' for some of the most serious diseases known and there is no legal machinery for stopping it—unless the exploiter is so crude as to violate either the national Food and Drugs Act or the postal laws against fraud! In the present instance J. White is sufficiently ignorant so that he apparently would violate both the postal laws and the national Food and Drugs Act. This does not however change the fact that with a little more fitness he could pursue this barbaric trade with impunity!

QUACKERY IN PENNSYLVANIA

Showing What One Newspaper Did to Protect the Public Against Charlatans

Last July the Philadelphia Record started to look into the problem of medical quackery and published a most meritorious and enlightening series under the general title "Bootlegging the Healing Arts." The Record called for no help from the medical profession, either locally or nationally. The Bureau of Investigation although it has a vast amount of data some of which of course is on Philadelphia quacks was not asked to furnish a line of information. Nevertheless because the Philadelphia Record went after quacks aggressively that paper was immediately accused of being but the cat's paw of the American Medical Association—the Medical Trust!

What the Philadelphia Record accomplished with the help of the local law-enforcing bodies is succinctly told in an editorial published by that paper January 19 last under the title "Quackery Can Be Suppressed." The editorial follows:

Thirty-seven cases, thirty-five convictions, one permanent and one discharge on benefit of the doubt—the unprecedented record made in the quackery prosecutions.

"Three jury verdicts of guilty, three convictions on the bench. These are the results of evidence gathered by the local and preserved with masterly effect by the District Attorney here under the impartial leadership of Judge Ferguson.

"No undertaking undertaken in such a manner as to be carried through in more impressive accordance. It resulted

compliments from three sources—in congratulations from the prosecutor and the Court, and in a defense attorney's plea to a jury

"The *Record* didn't do this to correct an abuse but to sell papers to gain circulation. Its idea was that the more doctors it could send to jail the more dividends it could pay

"Those slurs afterward withdrawn, justify a frank statement. "First, the *Record* was not so unsophisticated as to expect that a crusade of this nature would add to its circulation, and in fact the project resulted in no gain of that nature

On the contrary the *Record* foresaw that exposure of the quacks would offend many practitioners and a multitude of their followers. And, in fact, the publicity made more enemies than friends for the publication

The truth is exactly as stated by Mr. Hermes. "The *Record* discovered systematic violation of State laws and employed investigators at its own expense to get evidence that would end the abuses"

"Incidentally, complaints of 'persecution' by 'the medical trust' are as baseless as the others. The medical profession studiously remained aloof doubtless from fear of being accused of a desire to suppress competition

"All these, however, are now minor considerations. It is of real importance that the blow given to quackery should lead to better protection of the public health in the future

"Eventually measures should be taken to revise the whole system of licensing practitioners of the various methods of treating disease. But meanwhile there is urgent need for real enforcement of existing law

"That it is now virtually suspended, that a newspaper had to drag flagrant violators to Court, is due to lack of funds by the State Medical Board

"It is the duty of the medical profession to insist that the Legislature make adequate appropriations for this purpose, and that the responsible agency rid the State as it can of unlicensed frauds and incompetents masquerading as doctors

Correspondence

COLLECTION AND FINANCE COMPANIES

To the Editor—In view of the number of letters printed in THE JOURNAL, February 14, making complaints against certain collection and finance companies, it would appear that the problem is perennial

Several years ago, members of the Academy of Medicine of Cleveland were pestered with solicitations from a large number of collection agencies. After taking counsel, we wrote our members asking them to list with us the names and addresses of the companies with whom they had placed accounts in the few years preceding. We also asked for some comment as to the efficiency of the companies mentioned. The result was astonishing. The number of companies or individuals was four or five times larger than either the Academy or the Better Business Bureau of Cleveland realized

We then wrote to all these companies informing them that we were continually receiving requests for information from our members about them and their services and asking that they file with us copies of their contracts and a statement of their methods of operation together with names of some physicians with whom they had had satisfactory dealings. We explained that with facts on hand we could intelligently answer queries, without facts we would have to inform our members that there was no local information available about the company

As a result companies who had a local reputation of merit promptly furnished us with the material requested. Those who apparently had something to conceal refused to comply with our request. We then wrote to all our members, instructing them to call us every time a new solicitor appeared, concerning whom they had no information or personal knowledge

The result succeeded beyond our expectations. So far as we know, Cleveland has since been relatively free from the fly-by-night agencies. While many have attempted to open here they have not remained long nor have they obtained many accounts

We have repeatedly pointed out to our members certain methods of avoiding collection difficulties as follows

- 1 Accurate bookkeeping and regular billing by the physician.
- 2 Where collection is necessary
 - (a) Employment of an individual personally known to the physician
 - (b) Employment of a local collection agency whose reputation has been established by service covering several years
 - (c) Affiliation with retail credit companies or similar organizations operated by local merchants and professional men
 - (d) Prompt communication with our executive office whenever a solicitor of an unknown company makes a bid for accounts

This campaign (which is really not a campaign, but a continuous service) has been made possible and effective by cooperation with the executive office of the American Medical Association, in checking the national standing of unknown firms and by the cordial help and support of the local Better Business Bureau, which has made many investigations for us

H. VAN Y. CALDWELL, Cleveland

Executive Secretary, Academy
of Medicine of Cleveland

BLOOD CHEMISTRY VALUES

To the Editor—I am submitting a table of blood chemistry values which I have found practical and easy to remember

Total nonprotein nitrogen	30-40
Urea nitrogen	10-20
Uric acid	3-4
Creatinine	1-2

All values in milligrams per hundred cubic centimeters of blood

If the figures are read from the bottom up they are 1, 2, 3, 4, 10, 20, 30, 40. One needs only to bear in mind that the upper figures are high normals and even the slightest increase above the upper figure indicates pathologic change

This was first suggested to me by some one in my graduating class (University of Colorado, 1927)

This may be of value to those who cannot recall blood chemistry normals at random. JULIAN LOVE, Brooklyn

Lieutenant (j g) M. C., U. S. Navy

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted on request

PATHOLOGY IN DEATHS FROM ETHYL ALCOHOL METHYL ALCOHOL AND CANTHARIDES

To the Editor—What does postmortem examination reveal in cases of death due to ethyl alcohol, methyl alcohol or cantharides? What is the fatal amount of ethyl alcohol in a normal individual if there is a fatal dose? Would you please recommend a textbook on pharmacology and toxicology that is concise?

JAMES B. BURCHAM, M.D. Gary, Ind.

ANSWER—After death from acute poisoning with either ethyl or methyl alcohol, the usual changes are congestion of the lining of the stomach and duodenum with many small hemorrhagic extravasations, congestion and edema of the brain and its membranes and also of the lungs. In neither case are there any distinctively characteristic changes. After death from acute alcoholism the odor of alcohol may be detected from the contents of the stomach and the brain

After fatal poisoning by cantharides there will be found acute gastritis and enteritis as well as nephritis with perhaps acute inflammation in the lower part of the urinary tract. There may be blisters in the mouth and stomach, if the powdered cantharides has been taken there may be present in the stomach characteristic green, shining particles

The fatal dose of ethyl alcohol will vary depending on individual susceptibility, concentration of the alcohol taken, the

previous contents of the stomach and so on. Consequently no single quantity has been established as the average fatal dose. In most of the fatal cases, from 1 to 2 pints of whisky or brandy was reported as taken, which would correspond to from about 250 to 475 cc. of pure alcohol. In many cases a smaller quantity no doubt would be fatal. From 100 to 200 cc of pure grain alcohol may be regarded as the minimal fatal dose if taken at one time in concentrated form. Infants have died from two tablespoonfuls of brandy, and from 30 to, say 120 cc of absolute alcohol may be regarded as probably fatal to most children under 12 years of age, but Herter (*New York M J* 64 608, 1896) has reported an instance in which a child of 3½ years recovered after taking 12 ounces of whisky, that is, approximately 355 cc of alcohol.

Cushman's Text-Book of Pharmacology and Therapeutics revised by Edmunds and Gunn, now in its ninth edition and Sollmann's Manual of Pharmacology and Its Application to Therapeutics and Toxicology, third edition, are standard textbooks in their fields.

EXAMINATION OF VAGINAL SMEARS FOR TRICHOMONAS

To the Editor—Will you kindly give the method of examination of fresh smears for *Trichomonas vaginalis*? Please omit name.

M D Michigan

ANSWER—The word smear generally refers to a preparation that is stained and then examined for organisms. This is not the method for studying *Trichomonas vaginalis* especially for one who is not thoroughly familiar with these parasites. The way to detect *Trichomonas vaginalis* is by the simplest form of microscopic examination; namely, an examination of a drop of the fresh secretion obtained from the vagina. The drop of secretion may be obtained with a platinum loop from the vault of the vagina after exposure with a speculum. A more simple method is to make a vaginal examination on withdrawal, a moderate amount of secretion will be found adherent to the gloved fingers. For making slides the discharge that is high up in the vault and close to the vaginal wall should be used and not the discharge that is on the surface. One or more drops may easily be placed on cover slips or slides. If this method is used and the glove is dry when drawn on, the dusting powder should be washed off with soap and water before the vaginal examination is made. No antiseptic or lubricant should be used on the glove. For studying the organism fields should be selected where there is relatively little discharge, namely at the periphery of the drop of secretion. The drop usually consists of a large number of leukocytes and bacteria, many epithelial cells and many trichomonads. For the beginner it is best to add a drop of salt solution to the drop of secretion and then make the examination. With the ordinary high power lenses the parasites may be readily seen because of their motility. The trichomonads vary considerably in size. Usually however they are larger than a polymorphonuclear leukocyte but smaller than an epithelial cell. The organism varies in shape but usually it is spindle shaped or pyriform.

HAZARDS TO WORKERS IN STORAGE BATTERY INDUSTRY

To the Editor—F. C., a man aged 20 working in a factory in the manufacture of storage batteries has no direct contact with lead. His job is in the acid room where the lead plates are immersed in sulphuric acid connected in series and charged with an electric current for forty eight hours. He complains that his teeth are becoming yellow and that he cannot keep them white. The central incisors in spite of dental care show decay of the enamel. In addition there have been vague gastro-intestinal symptoms for a month especially attacks of dull epigastric pain, globus and local distention which wake him out of his sleep several times a night and for which he seeks relief. Is there such a thing as sulphuric acid poisoning? The room although large is permeated with its fumes. Kindly omit name.

M D Connecticut

ANSWER—There is no inherent lead hazard in the acid room of a storage battery factory. Cases have been observed in such work but invariably these may be traced to unusual circumstances, such as currents of air bearing lead dusts sweeping in from other rooms.

Sulphuric acid as used in this industry does not evaporate. As the result of mechanical action or thousands of minute bubbles created in the battery as a result of chemical action some sulphuric acid is thrown out into the air and may be inhaled. Workers exposed to this nebulized sulphuric acid frequently complain of damaged teeth and gastro-intestinal disorders. There is no reason to believe that sulphuric acid as such, long exerts after contact with the body, nevertheless the

number of cases detectable under exposure of this sort justifies the recognition of some deleterious influences. McCord and Friedlander (*Am J Pub Health* 16 274 [March] 1926) have reported a series of gastro-intestinal ulcerations or severe inflammations among galvanizers. In this industry the nebulized sulphuric acid combined with vapors of zinc oxide from the galvanizing kettle forms zinc sulphate. This acid-like substance was accepted as responsible for the gastro-intestinal disturbances encountered.

It in the present instance lead exposure may be ruled out and if acid actually is present it is reasonable to consider as probable some influence direct or indirect, from the acid on the mouth and gastro-intestinal tissues.

OPERATION OF CHOICE FOR SEXUAL STERILIZATION IN THE FEMALE

To the Editor—What at this time is considered the best operation for sexual sterilization in the female as shown by reported failure? Is the Madlener operation considered entirely satisfactory? We have been doing double crushing and ligating of the tube and have had no reported failure. In other institutions of this state they have preferred resection at the cornu of the uterus.

H C HENDEL M D Peterburg Va

ANSWER—Madlener (*Zentralbl f Gynäk* 50 219 1926) reported 128 cases in which he crushed and ligated the tubes according to his technic. The results were 100 per cent perfect, no pregnancy followed. Simple crushing and ligation of the tubes (Madlener angulates crushes and ligates) cannot be depended on. Pregnancy follows occasionally despite most pains taking technic. The most satisfactory and most widely accepted technic consists in excision of a portion of the tube at the uterine cornu with careful burying of the tubal stump in the broad ligament and painstaking suturing and peritonization of the uterine wound. It is well to bear in mind that removal of the fundus of the uterus not only sterilizes with certainty but may also rid the patient of the danger of subsequent bleeding or discomfort from a heavy dragging uterus.

HAZARDS OF SAND BLASTING

To the Editor—A corporation that I serve has asked me to inform it regarding the accuracy of a statement made by Dr. W. A. Evans in his syndicated article published recently entitled Steel Grit Blasting. It states:

The sand blasting industry is discovering that fine steel grit powder in many respects is superior to silica sand. Sand can be used only once in blasting because the force breaks up the particles and smooths off the corners and makes the sand useless. Steel grit dust can be used over and over again.

Sand is light and air currents carry it over everything. Steel grit is heavy falls out of the air and does not soil the neighborhood. When sand is used for blasting the cloud of dust makes it difficult for the workers to see around them. Not so with the steel grit dust. And overshadowing the other advantage of steel grit is its greater safety for employees. The man who works at sand blasting is so easily prone to develop silicosis a form of lung disease which is quite similar to consumption probably due to infection of tissues put in condition for infection by the dust.

In New York State a married man the father of four children recently died from silicosis. He was a sand blaster and the disease was a result of his occupation. His case went up through various boards and finally through the court and came to rest with the following, sententious formula: Cause of death silicosis. No compensation. Society may have to care for the family. When the man worked at his trade he always wore a hood and stayed in his dust cabinet. This cabinet and also the hood was attached to exhaust ducts through which fans drew away the dust laden air. It is believed that hoods of this type are sold or worn in sand blasting. The point is so fine that it will go into the hood in front of all that can be seen. The approved sand blaster's hood has air pumped in out of the atmosphere. The pressure is maintained inside of it. This is more effective in keeping out dust.

Have you any information which would as to the accuracy of the foregoing statement? L. A. T. H. L. D. O. V.

ANSWER—The United States Public Health Service in cooperation with the National Safety Council has been conducting over a period of many months an investigation of the hazards of sand blasting. No general report has been made although some information has been supplied to cooperating agencies. Until a full report is available it is doubtful that no fixed opinion or sand blaster and the relative merits of steel grit and sand can be expressed.

At this time it is proper to mention the following:

1. The use of silica sand for blasting is dangerous. 2. The use of steel grit for blasting is safer. 3. The use of steel grit for blasting is safer than the use of silica sand. 4. The use of steel grit for blasting is safer than the use of silica sand. 5. The use of steel grit for blasting is safer than the use of silica sand.

siliceous rock) buildings the cut surface rather than the cutting agent provides a highly dangerous silica dust.

2 The lifetime of steel grit used in blasting is not so extended as implied in the quotation in the query. The sharp cutting edges of steel particles are dulled by use and require replacement. Special steels possess properties permitting longer use but increased costs limit application.

3 Dust dispersion is greater for sand than for steel particles. This property is favorable to the use of steel grit.

4 Silicosis is prone to develop in any sand blaster long engaged in this work and unprotected by work conditions and appliances that obviate dust. Silicosis is however not an infectious disease. Tuberculosis may be superimposed on a silicosis but the latter state is an entity of chemical or mechanical (or both) origin.

5 Silico is acceptable for industrial compensation only in California, North Dakota, Wisconsin, Massachusetts and Connecticut. This state must be subject to recent changes. No effort has been made to check the specific case mentioned in the query but cases of this character are known to exist. A grave social injustice is being done in the discrimination against silicosis as an occupational disease in connection with compensation.

6 The usual type of mask or hood employed in the average dust trade is of restricted value in sand blasting. Positive pressure breathing helmets are preferable.

A recent discussion of this occupation may be found in an article entitled 'Ueber die Verwendung von Stahlschlacke in Sandstrahlgeblasen' by G. H. Zirkler, Gusserei (Düsseldorf), December 1930, volume 17, number 50, pages 1189-1197. This article gives a comparison of natural products—quartz, sand, river sand—with technical products, such as steel sand. Photostatic copies of this foreign article may be obtained at a low cost by writing to the Engineering Society Library, 29 West Thirty-Ninth Street, New York.

METALLIC TASTE IN MOUTH

To the Editor—A woman aged 21 has complained of a metallic taste in her mouth with a slight tendency toward salivation for the past two years. She has always been healthy, especially during the past three or four years during that period she has not received medication of any sort. She has never smoked, does not drink, eats a well-balanced diet and leads a routine life. The metallic taste persists constantly, the only relief being the partial obscuring of the taste while eating. The taste is most noticeable along the gum margin. Examination shows a healthy girl and repeated examinations show absolutely no pathologic conditions. The mouth is clean, the gums are healthy. There are a few gold fillings which have all been in more than three years. A thorough analysis of the source of foods does not show any way in which the patient could be getting metal. The cosmetics and tooth paste are all from reliable firms. She had been using zinc stearate between her toes but she has discontinued this without relief of symptoms. She is employed as a bookkeeper in a business office. No one in her home is employed where there would be contact with any metal. The patient is not the type prone to hysteria. She has been to other physicians who have done nothing for her. I find nothing in the literature about such a condition and would appreciate any suggestions. Please omit name. MD New York.

ANSWER—The cause of the metallic taste with otherwise completely negative observations would certainly suggest a psychoneurosis. Hallucinations of smell and taste occasionally occur in temporal lobe tumors, in which case other symptoms will soon appear. It is worth while attempting psychotherapy for this isolated subjective symptom.

USE OF INSULIN TO INCREASE WEIGHT

To the Editor—I have a patient who is suffering from malnutrition and the accompanying underweight. All attempts to overcome this have up to the present been unsuccessful. I have heard reports that insulin has been used with success in these cases but what literature I have read on the subject does not confirm this. Can you give me any information or references?

J MILTON HENRY MD Chicago

ANSWER—There have been many favorable reports concerning the use of insulin for increasing weight. A concise review of the work reported in this country may be found in the paper by James J. Short, MD, 'Increasing Weight with Insulin' (*J Lab & Clin Med* 14:330 [Jan.] 1929). This author ascribes this effect of insulin chiefly to the strong sensation of hunger which it produces and advocates doses of about 10 units three times a day before meals. He favors a rather high fat diet with insulin since the hunger occasioned by insulin may in some cases be allayed by relatively small quantities of carbohydrates.

An excellent review of the German literature on this subject may be found in the small monograph by Frank and Wagner, 'Insulintherapie' (Leipzig: Georg Thieme, 1931). These authors discuss the theoretical considerations involved in this action of insulin such as the retention of water and its influence on fat, protein and carbohydrate metabolism. They advocate doses of

at least 40 units a day and as much as 20 units three times a day. With such doses, of course the carbohydrate intake must be sufficiently great to avoid severe hypoglycemic reactions. The patient should receive, half an hour after the injection, at least 15 or 2 Gm of carbohydrates for every unit of insulin injected. Even so the patient may have symptoms of hypoglycemia within two or three hours. He should therefore have in readiness a snack of some sort with which to satisfy his hunger and relieve his symptoms. A chocolate bar is suggested as a convenient emergency ration.

DEMENTIA PARALYTICA

To the Editor—Can an individual in whom serologic examination of both blood and spinal fluid is negative have dementia paralytica in any of its stages? Could he be in evolutionary stages and show negative serologic results? In *Harvey's Handbook on Venereal Disease* 1930 edition, page 59 I note what he terms 'pseudogeneral paralysis' and he indicates that the patient does not lose the power of self-criticism and the realization of time and space are not lost unlike the general paralytic. The patient realizes he has something wrong with his brain and fears that he may be going mad. This disease he says is caused by diffuse cerebral endarteritis and often is combined with cerebral gummas. Would a patient with pseudogeneral paralysis necessarily have to show a positive serologic picture? How long would he be supposed to live? Would he be protected from the effects of overt acts in a medicolegal way the same as in general paralysis? Please omit name. MD Tennessee.

ANSWER—There is some question as to whether a diagnosis of dementia paralytica can be made in the presence of both negative blood and spinal fluids. It is possible that an occasional patient with the mental symptoms of this disease may have a negative Wassermann reaction. Neurologists are usually the men who demand a strongly positive Wassermann reaction in both spinal fluid and blood in a nontreated case before they will make the diagnosis.

In the meningeal types of syphilis, of which the diffuse cerebral endarteritis is a part, there may be a completely negative blood and spinal fluid in the presence of mental symptoms. If the patient has mental symptoms, they should be controlled but would follow the medicolegal aspect of any insane patient. One cannot say how long life can be prolonged. With treatment it will probably be much longer, but without treatment disease will probably last longer than in a case of dementia paralytica without treatment.

POSSIBILITY OF PREGNANCY AT MENOPAUSE

To the Editor—I have a patient who has not menstruated since late March. She is 45 years of age and has two children, the youngest of whom is 12 years of age. She has the various symptoms of the menopause. She is anxious to know whether there is even a remote possibility of again becoming pregnant. Can I tell her positively that it is impossible for her to become pregnant? Please use my initials only and no address. MD New York.

ANSWER—This patient should not be told positively that it is impossible for her to become pregnant. In spite of the fact that she has not menstruated for ten months and has symptoms of the menopause, there is a possibility that she may again conceive because impregnation may occur during or after the menopause. As a rule when conception takes place after the menopause it does so within a year of the last menstrual period, but women have also become pregnant a number of years after the cessation of the menses. In some of these cases impregnation takes place following a long period of amenorrhea, whereas in other instances the menstrual flow returns a number of years after the menopause and it is at this time that conception may occur.

HOARSENESS DURING MENSTRUAL PERIODS

To the Editor—A girl aged 15 years for the past two years has been getting hoarse a few days before her menstrual period and the hoarseness continues into the period. She has a congenital amblyopia with a high error of refraction causing intense headaches; this has been corrected. Menstruation started at the age of 12 and has always been irregular and painful. I have seen her the past two months and six days before menstruation she got hoarse so she could not talk above a whisper. The condition cleared up during menstruation. There is a slight congestion of the larynx and at no time any bleeding. All other physical examinations are negative. Is this a case of vicarious menstruation? What is the treatment and prognosis? Please omit name and address. MD Texas.

ANSWER—This is not a case of vicarious menstruation because there is no actual bleeding from the mucous membrane of the throat. Vicarious menstruation refers only to those rare instances in which hemorrhages occur in extragenital organs at regular intervals which correspond with the menstrual periods.

When the extragenital bleeding entirely replaces the usual uterine flow it is called substitutional, and when it occurs along with the normal uterine hemorrhage it is called supplementary menstrual hemorrhage.

It is difficult to give a satisfactory explanation for the hoarseness in this case. There may be a psychic factor to account for it because the menstrual periods are always painful. Another possible explanation may be periodic swelling of the thyroid gland. In some women the thyroid gland regularly enlarges just before or during the menses, and this enlargement may be seen and felt. It is conceivable that such a swelling may involve the recurrent laryngeal nerves that supply the vocal cords. It is also possible that the enlarged thyroid may compress the trachea and thereby produce the hoarseness. If enlargement of the thyroid gland is the cause of the hoarseness it may be difficult to control these periodic swellings unless the administration of iodine or iodine alternating with thyroid for a few days before the hoarseness appears will help. If there seems to be a psychic factor for the hoarseness, an attempt should of course be made to overcome this.

TREATMENT OF PROGRESSIVE MUSCULAR DYSTROPHY

To the Editor—I have a patient with progressive muscular dystrophy of the scapulohumeral type. He is now about 16 years old and showed degeneration of these muscles when about 14. The physicians of a dispensary have suggested intra muscular injections of drops of epinephrine hydrochloride and 1/20 grain of pilocarpine hydrochloride. I am unable to find out why they would think that pilocarpine could possibly do this patient any good. Could you? Is this an accepted treatment for progressive muscular dystrophy? Can you give me any information about this treatment? Can you suggest a treatment that might reasonably be of service? Please omit name.

M. D. Winneva

ANSWER—As far as can be determined no treatment of any kind is of any avail for progressive muscular dystrophy. All sorts of procedures have been tried, all sorts of drug, used and of late many glandular extracts have been tried without any results. That possibly the progressive muscular dystrophy is due primarily to some metabolic disorder conditioned by endocrine dysfunction is the current feeling.

DANGERS OF CARBON TETRACHLORIDE IN SHAMPOO

To the Editor—A patient of mine is using a scalp lotion composed of fruit juices combined with carbon tetrachloride. Is such a lotion harmless? Kindly omit name.

M. D., Massachusetts.

ANSWER—Shampooing with carbon tetrachloride may cause dyspnea, vertigo and headache as the consequence of inhalation of large amounts. One death has been reported from this cause. Impure carbon tetrachloride causes a severe dermatitis. When it is used as a scalp lotion this danger would be slight, but if there is any danger whatever the use of other harmless drugs would be advisable. See Alderson H. C. Carbon Tetrachloride in Dermatology (*Arch. Dermat. & Syph.* 8:411 [Sept.] 1923).

EFFECTS OF OOPHOECTOMY

To the Editor—Is there any known drug or treatment that will ameliorate the symptoms of artificial menopause caused by bilateral oophorectomy in a young woman. My patient, a school teacher aged 21, necessarily had bilateral oophorectomy done because of large dermoid cysts of each ovary.

M. J. REYER, M.D., Goodland, Kan.

ANSWER—There is no specific treatment. Thyroid extract in small doses is the only drug of accepted value. Sodium bromide, avoidance of coffee, and life outdoors are helpful.

RENDU-OSLER WEBER'S DISEASE

To the Editor—In THE JOURNAL, Aug. 10, 1929, page 478, while I was in Europe I read the letter and your reply to the query made by Dr. H. A. Brown, Whitinville, Mass., concerning a woman about to come to labor (August 15), a "partial bleeder." She had almost unconceivable hemorrhage in her first confinement nine years previously. Her father had "pronounced hemophilia." She did not bleed abnormally after the extraction of teeth or after cuts. The doctor could not understand why the condition was not expressed in his case of "hemophilia." These cases may have been not hemophilia but instances of Rendu-Osler-Weber's disease or perhaps instances of Frank-Clauser's hemophilia. Hemorrhagic thrombasthenia, probably the former. En taxis, platelet count, bleeding and clotting time and lot retraction are not mentioned. You do not mention Osler's disease as one of the causes of hemophilia. From the lungs, bronchi and trachea in your reply to Dr. H. F. G. Loomis, Londport, N. Y. in THE JOURNAL, Aug. 1929, page 472.

HAROLD I. GOLDSTEIN, M.D., Camden, N. J.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

AMERICAN BOARD FOR OPHTHALMIC EXAMINATIONS Philadelphia June 6, 1931 Sec. Dr. William H. Walder 1-2 S. Michigan Ave. Chicago Ill.

CALIFORNIA RECIPROCITY San Francisco and Los Angeles March 14, 1931 Sec. Dr. C. B. Pankham 420 State Office Bldg. Sacramento Calif.

MONTANA Helena April 7, 1931 Sec. Dr. S. A. Cooney Power Block, Helena, Mont.

NEW MEXICO Santa Fe, April 14, 1931, Sec. Dr. W. T. Towner 2021 First National Bank Bldg. Roswell, N. M.

WISCONSIN Madison March 21, 1931, Basic Science Sec. Prof. R. A. Limer 3414 W. Wisconsin Ave., Milwaukee Wis. Milwaukee April 13, 1931, Reciprocity Applications Sec. Dr. K. E. Flynn 15 State Bank Bldg. La Crosse Wis.

Florida November Examination

Dr. William M. Rowlett, secretary of the Board of Medical Examiners of Florida, reports the written examination held at Jacksonville Nov. 10-11, 1930. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Forty-four candidates were examined, 39 of whom passed and 5 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Yale University School of Medicine	(1925)	88.9	
Atlanta College of Physicians and Surgeons	(1920)	80.2	
Emory University School of Medicine	(1916)	80.8	
(1928) 84.2 86 (1929) 84.7			
University of Georgia Medical Department	(1927) 80.8	(1900)	84.9
Northwestern University Medical School	(1923)	82.9	
Indiana University School of Medicine	(1927)	79	
University of Louisville School of Medicine	(1920)	81	
Louisiana University of Louisiana School of Medicine	(1923)	80.2	
(1928) 80.1 (1900) 86 86.7			
University of Maryland School of Medicine	(1907)	81	
London University School of Medicine	(1900) 81.2	(1891)	78
Harvard University Medical School	(1927) 80.9	(1904)	80.9
Tufts College Medical School	(1901)	80.9	
Belleue Hospital Medical College	(1905)	80.9	
Columbia University College of Phys. and Surgs.	(1891)	76.4	
(1900) 83.6			
University of Buffalo School of Medicine	(1896)	81.2	
Miami Medical College	(1891)	81.2	
Jefferson Medical College	(1921)	81.2	
Medical College of the State of South Carolina	(1921)	81.2	
Vanderbilt University School of Med.	(1911) 84.2	(1927) 83.7	77.7
Medical College of Virginia	(1915) 82.4	(1900)	81.2
University of Toronto Faculty of Medicine	(1901)	80.2	
University of Western Ontario Faculty of Medicine	(1907)	80.2	
University of Havana Faculty of Medicine	(1923) 76.2 (1924) 76.4	(1912)	76.7
University of Naples Faculty of Medicine	(1923)	77.1	
College	FAILED	Year Grad.	Per Cent
Louisville Medical College	(1914)	70	
University of Louisville School of Medicine	(1911)	70	
Missouri Medical College	(1911)	70	
University of Nashville Medical Department	(1911)	70	
University of Havana Faculty of Medicine	(1911)	70	

* Verification of graduation in process.

Colorado October Examination

Dr. William W. Williams, secretary of the Board of Medical Examiners of Colorado, reports the written examination held at Denver Oct. 7, 1930. The examination covered 10 subjects and included 80 questions. An average of 75 per cent was required to pass. Five candidates were examined and passed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Kan. City College of Medicine and Surgery	(1911)	70	
University of Kharkov Faculty of Medicine	(1911)	70	
Osceola	(1911)	70	

Dr. Williams also reports 12 physicians licensed by the endorsement of credentials at the same meeting. The following colleges were represented:

College	Year Grad.	Per Cent
Hahnemann Medical College, Chicago	(1911)	70
Louisiana University School of Medicine	(1911)	70
P. H. Medical College	(1911)	70
Harvard University Medical School	(1911)	70
University of Melbourne Medical School	(1911)	70
St. Louis University School of Medicine	(1911)	70
Lincoln Medical College	(1911)	70
University of Nebraska College of Medicine	(1911)	70
Jefferson Medical College	(1911)	70
McKays Medical College	(1911)	70
University of Texas School of Medicine	(1911)	70

* Verification of graduation in process.

Book Notices

THE TREATMENT OF CHILDREN'S DISEASES WITH SPECIAL FORMULAS AND DRUGS FOR CHILDHOOD AND A SHORT DIAGNOSTIC SUMMARY OF EACH CLINICAL PICTURE. By Prof. Dr. F. Lust, Director of the Children's Hospital, Karlsruhe. Authorized translation of the sixth German edition with additions by Sandor A. Levinsohn, M.D., Associate Pediatrician to the Barnert Hospital, Paterson, N. J. Cloth. Price \$8. Pp. 513. Philadelphia: J. B. Lippincott Company, 1930.

This book had already been translated into Italian, Spanish and Russian. The sixth edition now has been translated into English. There are relatively few books in English that deal mainly with the treatment of children's diseases. The translation differs in certain respects from the original in order to conform with accepted American ideas, as on diabetes and vaccination and on the dosage of tetanus and diphtheria antitoxin. Dr. Lust has furnished additional notes since the sixth German edition expressing his latest views on such things, for example, acid milk mixtures, milk free feeding, rickets, pernicious anemia, asthma, bronchopneumonia, celiac disease, spasmophilia, scarlatina and congenital syphilis. The translator has also included ideas, methods and formulas derived from other European clinics and from American authors.

This is essentially a practical book for the pediatrician and especially a guide for the general practitioner doing some pediatrics. There is practically nothing on etiology. The diagnosis and differential diagnosis are mostly in outline or compound form which seeks to recapitulate the salient features of each clinical picture in the form of a short sketch. Only the high points are touched. However, more attention is given to the diagnosis of strictly pediatric conditions than to those that occur also in the adult. There are no illustrations.

The treatment is dealt with in more detail. It is definite and practical although conservative in the sense that no whims of the authors have influenced the accepted standards of treatment. The authors attempt to separate the chaff of therapy from the wheat. They also discuss proprietary preparations and indicate such medicaments as are of doubtful value. Only the most reliable methods for handling each condition are described, and only those methods included with which the authors have had personal experience. The first part of the book is divided into two sections. One section of 339 pages is devoted to the outline diagnosis and detailed therapy of the various infants' and children's diseases according to the group of organs affected, such as the heart and blood vessels, glands of internal secretion, and skin. The second section, of thirty pages, describes therapeutic technique, such as methods of blood transfusion, baths, breathing exercises and inhalations. The second part of the book is divided into two sections. The first section, of 117 pages, constitutes a miniature pediatric pharmacopeia. Nearly all the practical drugs are listed with their synonyms, physical properties, uses, dosages and antidotes. Besides giving general rules for the dosages, four groups are considered: doses for infants, children from 2 to 5 years, school children from 6 to 12, and adults. The maximum dose for adults is also given. If a drug cannot be used for infants, the dosage for this group is omitted. The preparations of certain infant foods are also described such as butter-flour mixtures and albumin milk. The second section, of three pages, is devoted to toxicology. The book is a manual of therapy, not for the undergraduate student but for the practicing physician.

THERAPIE IN EINZELDARSTELLUNGEN. WISSENSCHAFTLICHE GRUNDLAGEN UND PRAKTISCHE ANWENDUNG. Herausgegeben von Prof. Dr. R. von den Velden und Priv. Doz. Dr. P. Wolff. Therapie der komplizierten Schwangerschaft. Von Professor Dr. Rud. Th. von Jaschke. Direktor der Universitäts-Frauenklinik in Giessen. Paper. Price 3.10 marks. Pp. 71. Leipzig: Georg Thieme, 1931.

The author sets forth in a precise and condensed form the treatment of the complications of pregnancy. The subject is divided into three parts including complications due to anomalies of the ovum and membranes, complications dependent on pregnancy per se and diseases of the mother complicating pregnancy. No new modes of therapy are revealed but the well recognized methods of treatment are described in detail, actual prescriptions of medication being frequently presented. The author recommends the conservative treatment for eclampsia, describing in

detail the alternation of morphine and chloral hydrate, which he describes as the Zwielfel-Stroganoff treatment. Retroversions in early pregnancy are not manipulated until the second half of the third month, when if the condition is still present, the cervix is brought down with volsella and the uterus replaced by forward pressure of a finger in the rectum. This is important to avoid incarceration. For the treatment of puerperal pyrexia, the author asserts that diet plays the most important part in determining the reaction of the urine. He presents complete lists of common foods, classified as to whether alkaline or acid. On the alkaline diet 4 Gm. of sodium bicarbonate is given three times daily, and on the acid diet 0.5 Gm. of methenamine three times daily. *Trichomonas vaginalis* vaginitis is treated by scrubbing the entire vagina with 1 per cent corrosive mercuric chloride followed by 10 per cent sodium bicarbonate in glycerin. When the condition is apparently cleared, cultures of *Bacillus bulgaricus* are implanted into the vagina. The book is comprehensive and precisely written and should be a valuable addition to the library of the student and the practitioner as well as of the specialist.

A TEXT BOOK OF ORGANIC PHARMACEUTICAL CHEMISTRY FOR STUDENTS OF PHARMACY AND PHARMACISTS. By Charles H. Rovers, D.Sc., Professor of Pharmaceutical Chemistry in the College of Pharmacy, University of Minnesota. Cloth. Price \$7. Pp. 676 with 50 illustrations. Philadelphia: Lea & Febiger, 1930.

The text primarily is a commentary to the United States Pharmacopoeia and the National Formulary V, elucidating the reactions involved in their chemical processes, along with other useful information. In the greater majority of cases methods for manufacturing tests for identity and quantitative estimations are given for the compounds, also a list of the official preparations into which the compound enters and a concise description of the preparation and their uses. The book contains a number of minor errors: under potassium bicarbonate, baking soda appears as a synonym (although in some countries this is known), while for sodium bicarbonate it is omitted, ammonium valerate is given the formula for the normal salt, while in the description it is stated as 'having a somewhat varying composition'. Furthermore, under thallium it is stated "never used in medicine" causing the reader to wonder whether the author is familiar with the current uses of thallium acetate in depilatories. The printing is good. It is to be recommended as a reference work in that the author has refrained from describing in detail the therapeutic uses of the compounds in such a volume primarily for pharmacists.

KURZES HANDBUCH DER OPHTHALMOLOGIE. Herausgegeben von F. Schueck und A. Bruckner. Band III. Orbita. Nebenhöhlen. Lider. Tränenorgane. Augenmuskeln. Auge und Ohr. Bearbeitet von M. Bartel, A. Birch-Hirschfeld, R. Cords, A. Linck, W. Lohlein und W. Meisner. Paper. Price 134 marks. Pp. 745 with 454 illustrations. Berlin: Julius Springer, 1930.

The third volume of this handbook appeared promptly as promised in sharp contrast to its big sister, the Graefe-Siemisch Handbuch. The first chapter of this volume is on disease of the orbit, by Birch-Hirschfeld. It follows in general the same chapter in Graefe-Siemisch by the same author but is abbreviated to 136 pages by the elimination of case reports and much of the bibliography. Like all of this author's work, the chapter is excellent, thorough and well worth careful perusal. The second chapter deals with anatomy and diseases of the nasal accessory sinuses and is written by Linck of Greifswald. Owing to the close relationship to the eye, such a purely rhinologic discussion occupies an important place in an all embracing ophthalmic textbook. It is interesting to note the definite stand of the author regarding the rhinogenic origin of retrobulbar neuritis, based evidently on extensive clinical experience. This chapter occupies 106 pages. Next comes Lohlein with 124 pages on the lids. This is a well written clinical chapter. The following chapter of 72 pages, by Meisner on the tear passages, is not of the same caliber and in many spots is too elementary for an advanced work of this type. The physiology of ocular movement is taken up by Cords in the next 50 pages. This is well done from the standpoint of physiology, physiologic optics and clinical application. Much miscellaneous information, scattered promiscuously throughout the literature, is compiled in this chapter which is well worth the attention of every ophthalmologist. The pathology of eye movements is written by the same author and is allotted 170 pages. It is on a par with the pre-

reading chapter. Due attention is given the work of English and American involutists as well as to the continental authors. For Anglo-Saxon tastes, the question of various types of strabismus could have been elaborated on somewhat more at length, but this is compensated for by the excellence of the work on muscle paralysis. This part is illustrated extensively and in a way that clarifies the well written text. It is not particularly easy to read but is well worth while reading. The last part of the text 79 pages is taken up by Bartels with a discussion of the eye and ear, particular attention being paid to myasthenia of various types. It is a valuable supplement. On the whole, this volume maintains the standard set by the two preceding volumes in every respect. Typographic errors are few, the illustrations are clean-cut, good and pertinent to the text, and the indexing allows of easy accessibility to facts.

L'ARTHRITE CHRONIQUE DE LA HANCHE Par L. Duvernay, medecin consultant a Aux les Bains. Paper. Price 40 francs. Pp 147 with 51 illustrations. Paris: Masson & Cie 1930.

This little book deals with one phase only of the arthritic syndrome, *namely*, involvement of the hip. The subject is discussed under the heads of simple arthritis, proliferative arthritis, ankylosing arthritis and arthritis deformans and therefore does not fully fall in line with the two main divisions of atrophic and hypertrophic arthritis generally accepted in this country as well as in England under the terms rheumatoid and osteoarthritis. Certain premonitory symptoms are stressed, which should be of some value to students of the subject, such as inguinal pain and the preservation of flexion, while abduction is difficult or impossible. Surgical treatment is briefly dismissed as usually inadvisable. Medical treatment is rather naively comprehended by recommendations that are free from any views but do not suggest an especially philosophic grasp of the subject of arthritis as a whole. There are many reproductions of roentgenograms which, as is so often the case, probably fail to do justice to the originals. The book is paper bound and rather heavy though well printed. There is something to be said in favor of the publication of small books in paper form at a lower price than is necessary for a bound volume.

ABDOMINO-PELVIC DIAGNOSIS IN WOMEN By Arthur John Walscheid, M.D. Director of Obstetrical and Gynecological Department of Broad Street Hospital. Cloth. Price \$12.50. Pp 1000 with 397 illustrations. St. Louis: C. V. Mosby Company, 1931.

This is designed chiefly for the postgraduate and the general practitioner, and for student reference. It is written solely for diagnosis. The first third of the book is concerned with general gynecology. The remainder enters into detailed consideration of especial diseases of the various organs. The author assumes the rather unique view that illustrations leave only a fleeting impression and advocates that they be used sparingly. A fairly generous number of drawings are found throughout his book. In addition to illustrations from other works there are many photo-micrographs, pictures of pathologic specimens, and a large number of somewhat unusual schematic and semi-diagrammatic drawings. Walscheid has a fluent style and an unusually extensive vocabulary. He tends somewhat to confuse the reader by long drawn out dissertations on various topics that present the personal views and theories of the writer and are of only passing interest to the average reader. Despite the graceful manner of presentation, the book is rather difficult to read without fatigue. Salient points are hidden and important diagnostic items are often omitted or accorded only casual mention. The author's attitude relative to important factors in diagnosis is often in contrast with generally accepted views. For example he describes the *cerviceros cervix* as hard, whereas fertility and bleeding are the commonly accepted pathognomonic features emphasized in the palpatory diagnosis of this disease. Although reference is made to some American authors of note on the whole there is a dearth of names of men who are widely known in this field. This is probably the only textbook appearing within recent years which has accorded only passing mention to the name of John Sampson in the discussion of endometriosis—an oversight that can scarcely be forgiven in an American text. The book is presented in an unusual book—one that reveals an enormous amount of labor and presents many unique and interesting views. On the whole, however, it leaves one with the impression that

there is a lack of fundamental scientific data to support the theories advanced and an absence of proper emphasis on essential features of diagnostic importance.

A DISEASE OF PARROTS COMMUNICABLE TO MAN (PSITTACOSIS) By L. L. Sturdee, O.B.E., M.R.C.S., and W. M. Scott, M.D. Medical Officers of the Ministry of Health. Ministry of Health Reports on Public Health and Medical Subjects No. 61. Paper. Price 2s. 6d. Pp 132 with illustrations. London: His Majesty's Stationery Office 1930.

This report considers the recent outbreak of parrot fever particularly as it affected England. There are sections on the history of the disease, its epidemiology, the clinical aspects and the pathologic anatomy. Dr. Levy Simpson participated in the preparation of three of these sections. The treatment of the disease with convalescent serum is considered rather too conservatively in view of the fact that at present this treatment is the only approach to specific treatment available. The section on etiology is by S. P. Bedson and G. T. Western. Mervin Gordon contributes an article on virus studies of psittacosis. The view that psittacosis is caused by a filtrable virus is favored. The report is a valuable contribution to the literature on parrot fever of especial interest perhaps to medical health officials particularly in the practical aspects, but of value to all students of this disease.

CO SIDERACIONES CLINICAS Y NOSOLOGICAS SOBRE EL DELIRIO DE INTERPRETACION. Tesis que presenta para su examen general de Medico Cirujano y Partero Por Edmundo Bauntello y Villa. Paper. Pp 159. Mexico 1930.

This thesis is begun with a presentation of a typical case of paranoia. It is followed by a general discussion of this mental disturbance which also takes the hallucinatory and schizophrenic paranoias into consideration. The monograph is well written but references to medical literature are too few.

MANUAL OF HOSPITAL MANAGEMENT FOR U. S. MARINE HOSPITALS By M. H. Foster, Medical Director, United States Public Health Service, U. S. Treasury Department, Public Health Service. Miscellaneous Publication No. 29. Paper. Price 65 cents. Pp 303. Washington, D. C.: Dept. of Defense Government Printing Office 1930.

The manual is exactly what the name indicates and as such is complete and without doubt valuable for the use of those having to do with the management of United States marine hospitals. Much of the material would apply equally well to civilian hospitals. It contains chapters on hospital organization and administration, management of medical and surgical ward, dietetics, laundry, grounds, buildings and mechanical equipment. The appendix contains instructions, formulas, recipes and menus not usually found in books on hospital management including directions for planting and care of evergreens on the hospital grounds.

THE EFFECT OF QUININE ON THE PRODUCTION OF GAMETOCYTES IN SUBTERTAN MALARIA By C. Russell Ames. Fellow of the Institute for Medical Research, Federated Malay States No. 2 of 1930. Paper. Pp 10. Kuala Lumpur: Federated Malay States Government Printing Office 1930.

Forty patients having gametocytes in their blood on admission to the hospital were given 2 Gm. of quinine hydrochloride daily and were observed for seven days or longer. A comparison of this series with another one consisting of forty patients treated similarly but without quinine treatment indicates that quinine does not affect the production of gametocytes. This conclusion is corroborated by a third series in which the gametocyte content of the patients' blood was estimated for several days before treatment and compared with the gametocyte content after treatment with quinine.

HAUPTBUCH DER GEISTESKRANKHEITEN Herausgegeben von O. H. Bumke. Band VIII. "Senie" Teil Teil 4. Supplement. Ein Beitrag zur Lehre von der Paralyse des Grosshirns. Ein Beitrag zur Lehre von der epileptischen Krankheit. Bearbeitet von A. H. Bumke. H. W. Grunke u. W. Fay. Paper. Price 6 marks. Pp 71 with 50 illustrations. Berlin: Julius Springer 1931.

This volume deals in particular with psychiatric disorders due to syphilis, arterio-sclerosis and senility. An abstract of the contents of course, cannot be given. It must be stated as has been done as each volume of this handbook has been reviewed that nothing as complete or as well done has ever appeared before and that each volume is invaluable.

DIFF AND CARE OF THE SURGICAL CASE. By Reynold H. Boyd, M.B. Ch.B. F.R.C.S. Clinical Assistant at St. Peter's Hospital for Stone. With an introduction by C. C. Choyce, C.M.G. C.B.E. F.R.C.S. Director, Surgical Unit, University College Hospital Medical School. Paper Price 5/- Pp. 106. London: H. K. Lewis & Company Ltd. 1930.

This is a handy manual concerning preoperative and post-operative care. After discussing a few general principles in regard to diet and the preparation of surgical patients, the author considers the various parts of the body and presents the salient features required in the treatment of a number of conditions affecting these. A portion of the book is devoted to the surgical care of children in general as well as conditions peculiar to childhood such as cleft palate, harelip, intussusception, congenital pyloric stenosis and idiopathic dilatation of the colon. The manual is far from complete. It is essentially an outline of generally accepted standardized principles and procedures concisely presented.

Medicolegal

Compensability of Pneumonia

(*Gallup v. State (Conn.)* 149 Atl. 118)

Galluzzo worked himself into a sweat one winter day, shoveling sand in the course of his employment, and immediately thereafter rode in the cab of a truck for some distance. This was repeated several times, until late in the afternoon he was taken home ill, cold, and sore in his back and legs. Pneumonia developed and he died. The compensation commission denied compensation to his widow on the theory that if the pneumonia was traceable to the employment it could be only through weakened resistance or lowered vitality, and that it therefore came within the provisions of section 7, chapter 307, Public Acts of 1927, the Workmen's Compensation Act, in part as follows:

A personal injury shall not be deemed to arise out of the employment unless causally traceable to the employment other than through weakened resistance or lowered vitality.

The order of the commission was affirmed by the superior court, and the widow appealed to the Supreme Court of Errors of Connecticut.

In two cases previously decided by this court, said the Supreme Court of Errors, compensation was denied where an employee, doing arduous work under abnormal weather conditions, contracted pneumonia and died. *Lumane v. Actna Brewing Co.* 91 Conn. 158, 99 Atl. 507, L. R. A. 1917D, 77; *Dupin v. Atlantic Refining Co.*, 98 Conn. 646, 120 Atl. 288. Compensation can be awarded only for personal injury and for occupational disease. Pneumonia cannot be an "occupational disease" within the meaning of the compensation act because an occupational disease is there defined as a disease peculiar to the occupation in which the employee is engaged, due to causes in excess of the ordinary hazards of employment. The claimant's right to compensation, therefore, must rest on proof that the deceased suffered a "personal injury," and this must be an accidental injury, which can be definitely located as to the time when and the place where the accident occurred (Pub. Acts 1927, chap. 307, sections 2 and 7), a localized abnormal condition of the living body directly and contemporaneously caused by accident' (*Lumane v. Actna Brewing Co.*, *supra*). The concurrence of accident and injury is a condition precedent to the right to compensation. It is possible to satisfy the foregoing definition of 'accident' by proof of exposure or other severe working conditions. As to contemporaneousness, however it appears quite conclusively, said the court that the pneumonia was not a contemporaneous result of the exposure, and that the only contemporaneous result which could have been caused was a weakened resistance and a lowered vitality, which cannot be the basis of any compensable personal injury.

The judgment of the commissioner in denying compensation was accordingly affirmed.

Evidence. Certainty of Expert Testimony.—The testimony of three physicians and a chiropractor, it was contended, invaded the province of the jury in that the witnesses were not asked for their *opinions* but for their *conclusions* as to whether

the accident caused the condition from which the plaintiff suffered and whether the injuries received in the accident caused her invalidism. The condition of the plaintiff, said the Kansas City Court of Appeals, was fully described by lay witnesses, whose evidence tended to exclude all other causes than the shock and injury received. From that evidence alone, the jury could find that her condition when she instituted suit resulted from the injury. There was no reason, therefore, why she should be deprived of the cumulative evidence of her physicians and should not avail herself of their opinion that her condition might or could reasonably and probably result from the injuries. The case is to be distinguished from *O'Leary v. Scullin Steel Company*, 303 Mo. 663, 260 S. W. 53, which in no manner limits or prohibits expert testimony as usually employed in a typical personal injury case. The *O'Leary* case, however, establishes an exception as to the weight and sufficiency of expert testimony on a given issue which may be proved only by the evidence of men of science. In such a situation the testimony must be explicit and positive, from cause to effect, that the stated injury did in fact cause the condition which followed.—*Stevens v. Westport Laundry Co. (Mo.)*, 23 S. W. (2d) 491.

Society Proceedings

COMING MEETINGS

Alabama Medical Association of the State of Birmingham April 21
Dr. D. I. Cannon 519 Dexter Avenue Montgomery Secretary
American Association for the Study of Coter Kansas City, Mo. April 2
79 Dr. I. R. Yung 670 Cherry Street Terre Haute Ind. Secretary
American Association of Anatomists Chicago April 24 Dr. George W.
Corner University of Rochester School of Medicine Rochester N. Y.
Secretary
American Association of Pathologists and Bacteriologists Cleveland
April 23 Dr. H. T. Karsner 2085 Adelbert Road Cleveland Sec'y
American College of Physicians Baltimore March 23-27 Dr. E. R.
Loveland 133 South 36th Street Philadelphia Executive Secretary
American Gastroenterological Association Atlantic City May 4-5 Dr.
Charles G. Lucas 307 West Broadway Louisville Secretary
American Orthopedic Association Memphis Tennessee April 15-18 Dr.
DeForest P. Willard 1916 Spruce Street Philadelphia Secretary
American Pediatric Society Edgewater Park Mississippi April 15-16
Dr. H. C. Carpenter 1805 Spruce Street Philadelphia Secretary
American Physiological Society Montreal April 8-11 Dr. Arno B.
Luekhardt 3216 Greenwood Avenue Chicago Secretary
American Society for Clinical Investigation Atlantic City May 4-6
Cyrus C. Sturgis Simpson Memorial Institute Ann Arbor Mich. Sec'y
American Society for Experimental Pathology Montreal April 8-11 Dr.
C. Phillip Miller Jr. University of Chicago Department of Medicine
Chicago Secretary
American Society for Pharmacology and Experimental Therapeutics
Montreal April 8-11 Dr. F. D. Brown University of Minnesota
Medical School Minneapolis Secretary
American Society of Biological Chemistry Montreal April 8-11 Dr.
H. B. Lewis University of Michigan Medical School Ann Arbor
Mich. Secretary
Arizona State Medical Association Nogales May 7-9 Dr. D. F.
Hartbridge Goodrich Building Phoenix Secretary
Arkansas Medical Society Texarkana April 21-24 Dr. William R.
Bithurst Boyle Building Little Rock Secretary
Association of American Physicians Atlantic City May 5-6 Dr. Jarvis
H. Means Massachusetts General Hospital Boston Secretary
California Medical Association San Francisco April 27-30 Dr. Emma
W. Pope 450 Sutter Street San Francisco Secretary
Conference of State and Provincial Health Authorities of North America
Washington D. C. April 29-30 Dr. A. J. Chesley State Board of
Health St. Paul Minnesota Secretary
District of Columbia Medical Society of Washington May 6-8
C. B. Conklin 1718 M Street N. W. Washington Secretary
Federation of American Societies for Experimental Biology Montreal
April 8-11 Dr. H. B. Lewis University of Michigan Medical School
Ann Arbor Mich. Secretary
Hawaii Territorial Medical Association Wailuku Maui May 1-7 Dr.
F. J. Pinkerton Young Building Honolulu Secretary
Illinois State Medical Society East St. Louis May 5-7 Dr. Harold W.
Camp Lahl Building Wmoumouth Secretary
Kansas Medical Society Manhattan May 5-7 Dr. J. F. Hays Hays
Building Kansas City Secretary
Louisiana State Medical Society New Orleans April 14-16 Dr. P. T.
Talbot 1430 Tulane Avenue New Orleans Secretary
Maryland Medical and Chirurgical Faculty of Baltimore April 28-30
Dr. John T. King Jr. 1211 Cathedral Street Baltimore Secretary
Minnesota State Medical Association Minneapolis May 4-6 Dr. E. A.
Meyerding 11 West Summit Avenue St. Paul Secretary
North Carolina Medical Society of the State of Durham April 20-22
Dr. L. B. McBrayer Southern Pines Secretary
South Carolina Medical Association Greenville May 5-7 Dr. E. A.
Hines Seneca Secretary
Tennessee State Medical Association Knoxville April 14-16 Dr. H. H.
Shoulders 706 Church Street Nashville Secretary
Texas State Medical Association of Beaumont May 5-7 Dr. Holman
Taylor Medical Arts Building Fort Worth Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Issues of periodicals are kept on file for a period of five years only. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J Obstetrics & Gynecology, St Louis

21 156 (Jan) 1931

- Age Period Changes in Cervix Uteri Cancer Development. N. Freedman Montreal—p 1
- *Etiologic Factors in Carcinoma of Cervix. F. R. Smith New York—p 18
- Nephritis in Pregnancy. L. I. Stieglitz Chicago—p 26
- *Placenta Praevia at Johns Hopkins Hospital. C. H. Peckham Baltimore—p 39
- Radiation Treatment of Amenorrhea and Sterility. I. I. Kaplan New York—p 52
- *Arsenic Content of Human Placenta Following Arsenphenamine Therapy. A. F. Eastman Baltimore—p 60
- *Coordination of Uterus in Labor. L. Randolph and A. C. Ivy Chicago—p 63
- *Rhabdomyosarcoma of Corpus Uteri. P. F. Shipton Chicago—p 83
- Krukenberg Tumors of Ovary. Case Secondary to Adenocarcinoma of Jejunum. A. E. Bennett and W. Douglass Cleveland—p 91
- Twin Papraccous Fetuses in Triplet Pregnancy. K. M. Beierlein Ann Arbor Mich—p 97
- *Aniline Poisoning in New-Born. Thirteen Cases. A. A. Weinberg Brooklyn—p 104
- Crisis of Nosencephalitis with Erection of Abdominal and Chest Organs. Polyhydramnios and Other Anomalies. S. H. Polayes and J. D. Soifer Brooklyn—p 109
- Two Cases of Twin Pregnancy with Early Death of One Fetus. T. J. Parks Fairfield Ah—p 112
- Pregnancy as Complication of Neurofibromatosis. Four Cases. J. I. Kushner New York—p 116
- Crisis of Intra Abdominal Hemorrhage from Rupture of Uterine Vein During Pregnancy. H. C. Ellis New York—p 119
- Hemorrhage into Hydratid of Morgagni Simulating Acute Appendicitis. A. Heinrich Brooklyn—p 120
- Case of Chronic Menorrhagia Cured by Galvanic Dilatation and Zinc Chloride Ionization. V. C. Pedersen New York—p 122
- Rachitic Siegel Type Pelvis with Fruity Inclination and Marked Spinal Deformation. J. B. Jacobs Washington, D. C.—p 123
- Mono-Amniotic Twins with Twisted Cords. T. J. Williams Great Fall Mount—p 129
- Case of Uterus Unicornis with Rudimentary Left Uterus and Right Ectopic Pregnancy. D. W. Hart, St. Johns Mich—p 131
- Pregnancy in Uterus Bicornis Unicollis with Child Occupying One Horn and Placental Site a Portion of Both. W. A. Michael Peoria Ill—p 137
- Hemorrhage Complicating Pregnancy. P. A. Perkins Memphis Tenn—p 138
- Case of Pregnancy Complicated by Multiple Fibroid of Uterus. J. J. Hill Chicago—p 137
- New Obstetric Forceps. L. H. Zwentel Munich Germany—p 137

Etiologic Factors in Carcinoma of Cervix.—A series of 220 cases of known carcinoma of the cervix has been compared by Smith with an almost equal number (202) of patients who have escaped the disease in the attempt to discover wherein the two series differ and with the hope of finding possible etiologic factors. Only patients that had had two or more pregnancies and had reached the age of cancer incidence have been selected for the control group. Knowing cancer of the cervix to be a disease of the poor, all of the control group were selected from this class of patients. Parturition with its resultant damage to the cervix is a generally accepted etiologic factor in cancer of the cervix. With the majority of cancer patients proving to be multiparous, this is not increase in importance with the number of pregnancies. The incidence of the disease is known to be higher among the poorer classes. Smith's study shows that there are apparently five additional possible factors: (a) Length of time between marriage and first delivery (more than two years being cited for increased statistics) with the suggestion of a possible field for irradiation as to contraceptives used. (b) Use of douches with compound solution of cresol. (c) More than one instrumental delivery. (d) Dry labor. (e) Untrailed cervical lesions as manifested by leukorrhea. One of these five possible factors

was not present more often in cancer patients than in the control group but, with the incidence of two or more of the factors present, the inequality in percentages of each group total progressively increased with the increase in number of factors. It can certainly be considered that when two or more of these additional factors are present with the known factors of parturition and poverty, the incidence of cancer of the cervix is increased. Menstruation is not shown to be a factor in carcinoma of the cervix. Possible factors suggested as fields for further investigation are: (a) Incidence of induced abortion, with especial reference to instrumentation. (b) Contraceptives types and duration of use. (c) Duration of labor. (d) Frequency of intercourse. (e) Observance of Mosaic laws.

Nephritis in Pregnancy.—Fifty-five cases of nephritis in pregnancy have been analyzed by Stieglitz. Nephritis in pregnancy is clearly divisible into three major classes: (a) The nephritis of pregnancy (syndrome of renal fatigue in pregnancy). (b) Eclamptic intoxication. (c) Preexisting renal and/or vascular disease exacerbated by pregnancy. A fourth group includes all those cases having other complications, such as cardiac disease, thyrotoxicosis, infections, and obstetric difficulties. Each of these groups is clearly defined and retains individual characteristics. The clinical syndrome, date and type of onset, associated changes, mode of therapeutic attack, and the prognosis differ in each group. Efficient therapy can be obtained only through proper recognition of the type of renal disease. Careful consideration of the causative factors of the renal injury and constant cognizance of the condition of the patient. It is not the disease that requires treatment but the patient.

Placenta Praevia at Johns Hopkins Hospital.—In a service of more than 36,000 admissions, Peckham says that placenta praevia occurred in 146 instances or approximately 1 in 250. In women admitted as emergency cases, the incidence is 1 in 30 whereas among those registered for prenatal care it is 1 in 500. It occurs once in every 98 deliveries in white women and once in every 158 in Negro women. The gross maternal mortality for the series was 10.96 per cent. It is higher in the Negro than in the white race, being 13.21 per cent and 9.68 per cent respectively. The maternal death rate from 1896 to 1910 was 19.23 per cent; since 1920 it has fallen to 8.64 per cent. In 57 cases of the marginal type there was only 1 death (1.75 per cent). 14.75 per cent of the cases of the partial type terminated fatally, while central placenta praevia gave a mortality of 21.43 per cent. The mortality was 5.36 per cent when the initial examination revealed the woman to be in good condition. This figure rises in the group classed as "fair" and when the situation was deemed ominous on admission the mortality reached 36.84 per cent. In 33 women admitted with a pulse below 90 there was not a single death. In 17 women admitted with the cervix closed there was not a single death. The highest maternal mortality (25.53 per cent) occurred in the group delivered immediately after admission. This group included cases of accoucheur force, widely dilated cervix, with bleeding throughout several hours of labor. There was not a single death among 35 women who were delivered not less than twelve hours after admission. Concerning the maternal mortality from the point of view of duration of pregnancy, the rate was 4.55 per cent when the pregnancy ended prior to the last lunar month whereas it was 15.58 per cent in those patients who were at or near term. A comparison of the maternal death rate according to the weight of the child delivered shows a higher figure at less than 5.5 lb. exceeds 2500 Grs. The mortality rate was 4.55 per cent at birth weights as against a much higher one at the full term. The mortality was highest in women who had had to or more previous pregnancies, 23.08 per cent. The highest mortality occurs in women aged 40 or more. Only 1 death occurred from a case of Hemorrhage was the most important factor in 13 cases. One woman died of a fatal embolism and 11 of surgical shock, the result of operative procedures being advised. In 6 of the 13 deaths due to bleeding the condition of the patient on admission was desperate. Only 1 of the cases died directly the responsibility of the doctor, the other 5 per cent falls to 5.49 per cent. The gross maternal mortality was 7.81 per cent. This is due partially to the large number of emergency admissions—10.92 per cent of all—146 cases.

2 500 Gm. Considering only those babies weighing 2 500 Gm or over, where the fetal heart beat was present on admission, the mortality falls to 38.71 per cent.

Arsenic Content of Placenta Following Arspenamine Therapy—Arsenic determinations were made by Eastman on twenty one human placentas from patients who had been receiving prenatal arspenamine therapy. After ten placentas had been analyzed it was thought that the results would be more significant if the placentas were divided into fetal and maternal portions, and each portion analyzed for arsenic in the last eleven placentas studied this procedure has been carried out by a technique to be described shortly. Following antenatal arspenamine therapy, arsenic is retained by the human placenta over periods as long as fifteen days after the last treatment. The duration of the retention is conditioned in part by the number of weekly injections the patient has had, a definite cumulative retention of arsenic being manifest. The retention of arsenic by the human placenta occurs chiefly in the fetal portion which often contains three or four times the quantity demonstrable in the maternal part. The storage of arsenic by the human placenta and particularly its greater concentration in the fetal part may be an important factor in the beneficial action on the fetus resulting from arspenamine therapy.

Coordination of Uterus in Labor—Two cases of asymmetrical contractions of the uterus in labor are reported by Rudolph and Ivy. These cases raised the question of the mechanism concerned. A review of the embryology, comparative anatomy and physiology of the uterus shows that it has a bilateral origin and that the two halves, except where fused, act more or less independently. On fusion, a correlating mechanism becomes manifest. A type of coordinated activity manifested by the postpartum uterus of the dog has been studied. An extrinsic and an intrinsic mechanism has been discovered, one resident in the uterine wall and the other in the uterovaginal ganglions, the former being the most important, and it has been found that the dog's uterine motor mechanism in situ manifests the phenomena of refractory period and "summation." On the basis of a functionally defective coordinating mechanism, the irregularity in the uterine motility, obliquity of the uterus in the two cases observed, is explained and a basis for the explanation of other types of abnormal motor activity is offered.

Rhabdomyosarcoma of Corpus Uteri—A rare case of rhabdomyosarcoma of the corpus uteri is reported by Shapiro. It arose subserously, as a simple heterologous tumor, and apparently within a preexisting myoma. It developed from embryonic rests of striated muscle cells displaced in the course of the downgrowth of the wolffian duct.

Aniline Poisoning in New-Born—In the thirteen cases reported by Weinberg the poisoning resulted from the baby's body being wrapped in clothing freshly marked with the hospital identifying lettering. In practically all the cases the printing was found to be in contact with some part of the babies' bodies, in fact, definite staining was found on the skin of eight of the thirteen babies. The immediate measures that were undertaken to eradicate the danger were as follows: All new linens were removed from contact with the infants. The babies were thoroughly washed with alcohol or ether to remove all the print stains and were then clothed in linen that had already been boiled and washed. A mixture of oxygen and 5 per cent carbonic acid was administered to babies as needed. All babies were carefully observed every few minutes so that immediate measures could be undertaken if a patient suddenly became worse. The symptoms manifested were as follows: The pulse in every case became very rapid but maintained its regularity and rhythm. There was no variation of the temperature from normal. Respirations were greatly accelerated but continued regular. Cyanosis was marked in practically all cases. Cyanosis was most evident on the lips and eyelids. All suffered from anorexia. The degree of apathy was pronounced in practically all cases. The response to stimuli was decreased in every instance. Only one case showed what could be considered a convulsive seizure. The cry was decreased in strength in every case. The extremities tended to be cold and cyanosed in all cases. The subsequent course showed complete recovery in every case within a period of from twenty-four to seventy-

two hours, without any observable harmful effects. The mixture used for marking contained phenol, levulic acid, aniline, and induline dye (spirit soluble).

American Journal of Public Health, New York

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- Comparison of Dominick-Lauter Test for B. Coli in Water with the Standard Methods H. W. Leahy, J. W. Freeman and C. Katsampas, Rochester—p. 11
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American Review of Tuberculosis, Baltimore

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- Tuberculous Infection in Children as Bases on 3,500 Intracutaneous Tuberculin Tests L. B. Dickey and R. P. Seitz, San Francisco—p. 7
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- Persons with Potential Vitamin Deficiency B. Gordon and E. Flann, Philadelphia—p. 84
- Intramuscular Use of Sodium Amytal in Advanced Tuberculosis H. Cherry, Louisville, Ky.—p. 90
- Measurement of Generalized Nursing Service in Two Southern Cities in Relation to Tuberculosis Control E. T. Krueger, Nashville, Tenn.—p. 93

Differential Quantitative Tuberculin Test—A differential quantitative intracutaneous tuberculin test using both human and bovine tuberculin in parallel series is described by Blair and Calland. The dilutions used are so chosen that basic dilution is of a potency comparable to that of the Mantoux test, and the series extends to dilutions sufficiently weak to exclude all but the truly hypersensitive tuberculin reactants. These dilutions, with tuberculin of a potency usually found in commercial samples, range from 1:10,000 to 1:10,000,000. Inclusion of both human and bovine tuberculin diminishes possibility of missing occasional cases, which might be overlooked when only one type of tuberculin is used. A total of 471 cases is reported comprising children and adults, tuberculous and nontuberculous. Of 121 tuberculous cases, 90.9 per cent reacted positively to the diagnostic dilutions, and 9 per cent gave a negative reaction. Of 350 nontuberculous cases, 92.5 per cent gave a diagnostically significant negative reaction. 74 per cent reacted to the diagnostic dilutions. Of 23 tuberculous cases tested with both human and bovine tuberculin, 4 (17.3 per cent) would have been missed had only one type of tuberculin been used.

Tuberculous Infection in Children—Dickey and Seitz made 3,500 intracutaneous tuberculin tests on children. The incidence of tuberculous infection, as shown by such tests, increases with age. The incidence for the vicinity of San Francisco is 46.6 per cent at 14 years, about the beginning of adult life. This rate is compared with those obtained by similar methods in other communities. The authors assert that the Pirquet tuberculin test should not be employed in studies of this kind, since it gives erroneously low figures.

Sodium Amytal in Advanced Tuberculosis—Cherry reports sixteen cases in which he administered from 3 to 5 grains (0.2 to 0.3 Gm.) of sodium amytal intramuscularly for hypnotic and analgesic purposes. It does not produce local pain or tissue change even in the most emaciated persons. Physiologically,

however within fifteen minutes after injection the patients begin to experience mild cerebral depression so that apprehension and muscular tension seem markedly restrained. The thalamus, along with the medulla, seems to be markedly influenced so that pain and sensory reflexes are restrained. These actions of the drug grow in intensity for a period of three or four hours and are prolonged over a period of from eight to twenty-four hours according to the size of the dose. In no instance has Cherry seen complete narcosis approached when the dose did not exceed 6 grams (0.5 Gm.). Smaller amounts do not produce sleep from which the patient cannot be awakened easily and quickly to clear consciousness. Occasionally sleep is not without excitement causing the patient to talk and move about in bed. The blood pressure or respiratory cycle is not appreciably disturbed. Gastro-intestinal motility is not disturbed, although almost every case presenting abdominal pain experienced marked alleviation.

Annals of Internal Medicine, Ann Arbor, Mich.

4: 669-880 (Jan.) 1931

- Influence of Etiology of Cancer. L. Loeb. St. Louis.—p. 669
Influence of Heredity on Occurrence of Cancer in Animals. H. G. Wells. Chicago.—p. 670
*Heredity of Carcinoma in Man. A. S. Warthin. Ann Arbor.—p. 681
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*Association of Cholecystitis with Cardiac Affections. M. Schwartz and A. Hermann. Philadelphia.—p. 783
*Cessation of Attacks of Auricular Paroxysmal Tachycardia by Use of Calcium. J. B. Wolfe and S. Belleit. Philadelphia.—p. 793
Diagnosis of Gastric Lesions by Intragastric Photography. R. Finckelstein. Brooklyn.—p. 807
Hereditary Juvenile Pellagra. C. J. Bloom. New Orleans.—p. 817

Heredity of Carcinoma in Man.—Putting all of the observed facts together, Warthin says that the following data are available concerning hereditary susceptibility to neoplasms: multiple incidence of neoplasms in family generations; dominant inheritance of neoplasms in some families; recessive inheritance of neoplasms in some families; "Durchschlag" inheritance in some families; appearance of neoplasms at an early age in the later generations; appearance of neoplasms independently of extrinsic factors; multiple incidence of neoplasms affecting the same organ or system; multiple incidence of neoplasms affecting different organs or systems; varying degrees of resistance or susceptibility to neoplasms within the same family generation; symmetrical tumors in different members of the family; and the occurrence of symmetrical neoplasms in the same organ and part of the organ or its mirror image in identical twins. It seems to Warthin that the best interpretation of these facts rests on the assumption of at least four hereditary factors: the normal constitution resistant to blastoma; the pathological blastoma constitution; the normal resistant organ or tissue; and the pathological organ predisposition to cancer. Each of these factors must be composite; no one is a simple unit factor in the mendelian sense. In some families the four factors appear to be inherited as genes. The individual who has a single case of cancer developing in two or three generations of his family has not great cause for worry. But the individual who has a family history of the multiple incidence of cancer in several generations should take heed.

Association of Cholecystitis with Cardiac Disorders.—Of 109 patients with chronic cholecystitis studied by Schwartz and Hermann 63.3 per cent had associated myocardial disease or which 56.5 per cent were combined with obesity. Of the entire group 52.2 per cent were obese, 68 per cent of the obese patients had Leitz disease. It is deduced from data obtained in this study that the infected gallbladder and obesity are equally responsible for the myocardial damage of patients with chronic cholecystitis.

Cessation of Auricular Paroxysmal Tachycardia by Use of Calcium.—A series of three cases of simple tachycardia is reported by Wolfe and Belleit with electrocardiograms in which the paroxysms were immediately terminated by the

intravenous use of calcium. It is believed that this is a therapeutic measure which while not successful in every instance is well worth trying when other methods have failed and when the length of the attack is dangerously prolonged. There is some evidence that administration of calcium by mouth between attacks tends to lessen the number of paroxysms.

Annals of Surgery, Philadelphia

93: 3480 (Jan.) 1931

Institutional Contributions to Study of Cancer in Honor of Dr. James Ewing

Archives of Dermatology and Syphilology, Chicago

23: 1212 (Jan.) 1931

1. Izquierdo. Peculiar Monosymptomatic Form of Leprosy. V. Ibarra-Castello Havana and G. M. Caballero Matanzas Cuba.—p. 1
2. Pittman. Lichenoides et Varioliformes Acuta (Hahernmann). F. E. Smith and E. A. Oliver. Chicago.—p. 12
3. Id. Variety of Parapsoriasis. P. Gross. New York.—p. 33
4. Acne Comedonica. H. E. Nicholson and P. K. Allen. Minneapolis.—p. 49
5. Dermatitis of Eyelids Caused by Dorian. Delayed onset of Local Hyper-sensitivity after Eleven Years Use. C. L. Currier. Cleveland.—p. 68
6. *Intestinal Flora in Psoriasis. H. J. Schwartz, J. C. Torrey and J. F. Driver. New York.—p. 79
7. Penetration of Skin Following Intradermal Injection of Arsphenamine. Postarphenamine Dermatitis. J. E. Moore, S. T. Wood, H. M. Robinson and I. N. Cav. Baltimore.—p. 77
8. *Untoward Results from Use of Gold Compounds. Fatal Case. J. R. Driver. Cleveland and J. N. Weller. Akron, Ohio.—p. 87
9. Arsenic in Dermatology. P. E. Beebe. New York.—p. 110
10. *Nonspecific Therapy in Dermatology. C. S. Wright. Philadelphia.—p. 118
11. Lecithin and Cholesterol Studies in Dermato-phytosis. I. Rosen and I. Krasnow. New York.—p. 132

Intestinal Flora in Psoriasis.—Schwartz et al. report that no evidence has yet been found that would seem to indicate any connection between the numbers and types of bacteria vegetating in the human intestine and the development of psoriasis.

Reactions of Skin to Intradermal Injection of Arsphenamine.—Intradermal tests with arsphenamine preparations have been carried out by Moore et al. in four groups of persons: (1) thirty-six normal controls, (2) sixty-one patients with syphilis most of whom had received therapeutic injections of arsphenamine without the occurrence of reactions of the dermatitis group, (3) nineteen patients with allergic instability (hay-fever) and (4) thirty-five patients who had suffered from postarsphenamine dermatitis. In about 60 per cent of normal persons a delayed reaction, "flare-up" develops at the site of intradermal injection after an incubation period of from three to four weeks. This has been interpreted as evidence of sensitization of the skin to arsphenamine. In a smaller proportion (44 per cent) of syphilitic patients under treatment, similar reactions develop which are less severe and extensive and which appear earlier (in from two to three weeks) than in normal controls. This reduction in incidence and severity and the shortening of the incubation period are attributed to the desensitizing effect of the previous or simultaneous intravenous administration of arsphenamine. In all except one of a series of patients with hay-fever tested, much more violent and severe reactions developed than in normal or syphilitic controls and these reactions appeared earlier (in from one to two weeks) than in either of the control groups. This is interpreted not as sensitization to arsphenamine but as probably due to local auto-inoculation of the sensitized patient with his own antigen (pollen) in an inflamed area (Auer's phenomenon). In thirty-five patients with postarsphenamine dermatitis severe postarphenamine reactions appearing much earlier (in from two to seven days) than in any of the other groups occurred in 70 per cent of those who had had the exfoliative type of dermatitis and in only 11 per cent of those who had had other types of rash. A negative skin test in postarsphenamine dermatitis does not indicate the absence of hypersensitivity to arsphenamine since many reacting patients had often had repeated generalized reactions on attempts to administer therapeutic doses of the drug.

Results from Use of Gold Compounds.—Report is made by Driver and Weller of a series of patients treated with gold compounds. In 25 cases of lupus erythematosus gold therapy was used in 10 cases and in 15 cases of lupus erythematosus in 10 cases. A general review of the

developed with fever, prostration, hemorrhages from the vagina, total loss of heming, and icterus. It is believed that death resulted from acute yellow atrophy of the liver due to idiosyncrasy to gold.

Nonspecific Therapy in Dermatology—Wright asserts that nonspecific therapy is of definite value in the treatment of a number of diseases of the skin. Autohemotherapy may prove of distinct value in the treatment of psoriasis, as an adjunct to local therapy, and in lessening the activity of the eruption it is often a distinct aid in the treatment of patients with chronic urticaria. Milk preparations are of value for the immediate treatment of furunculosis and carbunculosis. Pruritus of idiopathic origin or severe pruritus accompanying a dermatosis may in some instances be quickly and effectively relieved by the intramuscular injection of a milk protein. In eczema, acne and psoriasis milk preparations have proved disappointing. Nonspecific vaccine therapy is of some value in the treatment of psoriasis. The use of a *Streptococcus fecalis-Bacillus coli* vaccine is recommended for office use when a mild nonspecific action is desired in psoriasis. Injections of turpentine have proved of value in the treatment of trichophyton infections and certain bacterial infections.

Archives of Internal Medicine, Chicago

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- *Mild Forms of Coronary Thrombosis R. I. Levy, New York—p. 1
- Structure of Normal Lung Surface Stereomicroscopic Study M. Joannides, Chicago—p. 19
- Mechanism of Pneumonia M. Joannides and F. H. Steinman, Chicago—p. 24
- *Erythema Infectiosum Epidemic in Branford Conn. A. I. Lawton and R. E. Smith, New Haven Conn.—p. 28
- *Leukemic Changes of Gastrointestinal Tract W. S. Boikar, Chicago—p. 42
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- Electrocardiogram in Obesity S. H. Proger, Atlanta—p. 64
- *Hypochromic Anemia with Achlorhydria T. R. Waugh, Montreal—p. 71
- Cholesterol Partition of Blood Plasma in Parenchymatous Diseases of Liver E. Z. Epstein, New York—p. 82
- *Polycythemia Vera and Chronic Pulmonary Disease A. W. Barker, Rochester, Minn.—p. 94
- Chemistry and Metabolism in Experimental Yellow Fever in Macacus Rhesus Monkeys III. Blood Sugar and Liver Glycogen A. M. Wakeman and C. A. Morrell, New Haven Conn.—p. 104
- *Potassium Content of Hearts of Persons Dying from Edematous and Nondematous Conditions L. C. Scott, New Orleans—p. 116
- Blood Lipoids in Nephrosis and Chronic Nephritis with Edema L. Lichtenstein and E. Z. Epstein, New York—p. 122
- *Terminal Hypoglycemia F. G. Schmidt, Baltimore—p. 128
- *Liver Extract for Pernicious Anemia Blood Changes During First Month One Hundred and One Cases L. G. Zerfas, Indianapolis—p. 135
- Gastric and Duodenal Ulcer in Black People of Abyssinia S. Bergsma, Addis Ababa, Abyssinia—p. 144
- Gastrointestinal Myiasis Case A. F. Brand, Fayetteville, N. Y.—p. 149
- *Primary Bacillus Pyocyaneus Meningitis Case with Recovery W. T. Vaughan, R. Beck and T. S. Shelton, Richmond, Va.—p. 155

Coronary Thrombosis—Eight cases are reported by Levy as exemplifying mild forms of coronary thrombosis. The records of these patients appear to define a distinct clinical group, characterized chiefly by the relative youth of the patients (all being less than 50 years of age) and the rapid rate of recovery, both subjective and objective. A critical analysis is made of the various features, and some of these are discussed. Because the clinical picture is at times atypical, it is believed that this condition frequently is not recognized. Although a rapid rate of recovery tends to indicate a favorable outcome of the immediate attack, accurate prognosis as to the liability to recurrence and life expectancy is extremely difficult.

Erythema Infectiosum—An epidemic of ninety-seven cases of erythema infectiosum occurring in Branford Conn., is reported by Lawton and Smith. Experimental work the results of which were entirely negative, is cited. The epidemic in Branford was similar in all respects to previously reported epidemics of erythema infectiosum. The characteristic features of the disease are the rash, its distribution, the evanescence, the relatively long duration and the absence of other symptoms. It seems to be a distinct clinical entity, and all evidence points to its being transmitted from person to person although the exact mode of transmission and the etiology of the disease are unknown.

Leukemic Changes of Gastrointestinal Tract—From sixteen cases of leukemia, eleven myelogenous and three lymphatic, were studied by Boikar with reference to the gastro-intestinal involvement. Nonspecific changes were found in nine cases (acute myelogenous leukemia, consisting of hemorrhages, ulceration and secondary inflammatory processes. In two cases (acute myelogenous leukemia) there were no changes. Specific changes were found in two cases of acute myelosis consisting of infiltration of the appendix and an infiltration of Peyer's patches, respectively. Specific changes were found in one case of chronic lymphatic leukemia. The stomach was enormously enlarged with huge convolutions on the inner surface giving it a brain-like appearance and the intestines were beset with plaques and polypus-like infiltrations. In a review of the literature a other such case was not discovered. The case was found however to parallel exactly those described as leukemic lymphadenoma or pseudoleukemia gastro-intestinalis. From these facts it is concluded that the leukemic and leukocytic leukemias are fundamentally identical. In further support of this conclusion a last case is described in which an aleukemic lymphadenoma terminated as an acute leukocytic lymphadenoma.

Hypochromic Anemia with Achlorhydria—This type of anemia, according to Waugh is so readily confused with other hypochromic anemias that it often is not recognized. Many physicians are satisfied to rule out pernicious anemia carefully and then to rest content on a diagnosis of "secondary anemia" without further investigation or distinction. A smear is made and a blood count is done, no megalocytes are found, the color index is low and at once all interest in the anemia disappears. This condition never reaches the severity of pernicious anemia and hence is more readily passed over. The patients do not look as sick as they really are and one is greatly surprised to find the hemoglobin so low. They show so favorable a picture, on physical examination except for the anemia and they complain so little except of fatigue, lassitude and perhaps palpitation on exertion that one is inclined to consider them hypochondriac. Moreover, although the anemia is persistent, it rarely, if ever, increases to a sufficient degree to cause the death of the patient. All of the author's cases have occurred in women, from 35 to 45 years of age, though occasional cases in younger and slightly older women occur. No case occurred in a woman after the menopause. Physical examination reveals comparatively few abnormal signs. The red blood cells are only moderately reduced in number, figures between 3,500,000 and 4,000,000 being most common. On the other hand, the hemoglobin is relatively low, ranging from 30 to 60 per cent. Consequently, the color index is often extremely low, and the hemoglobin concentration is markedly reduced. In typical cases there is a moderate leukopenia. The blood plates are somewhat reduced in number though low figures suggesting an approaching hemorrhagic diathesis were not observed. Finally, the serum is inclined to be a rather pale yellow with a faint or moderate green tinge. To summarize, there is a marked low color index, a hypochromic anemia, with evidence of deficient erythropoietic and leukopoietic myeloid activity. Moreover, the anemia is not hemolytic. The anemia in these cases is extraordinarily persistent. Following pregnancy there is apparently some improvement, but a marked anemia persists. The patients invariably complain that they dislike taking iron and that it does them no good. Arsenic possibly causes an improvement in the subjective symptoms but no appreciable alteration in the blood picture. These cases do not respond to liver therapy as do those of pernicious anemia. The benefit of transfusion is only temporary, and the blood rapidly falls to its previous level. In fact the persistence of the anemia and its tendency to maintain a constant level for months in spite of all manner of therapy is one of the striking characteristics of the disease.

Polycythemia Vera and Chronic Pulmonary Disease—Four cases of polycythemia and chronic pulmonary disease with blood volume comparable to that seen in polycythemia vera are reported by Barker. Treatment in these cases was by the administration of phenylhydrazine hydrochloride, there was a definite reduction in the blood volume with clinical subjective and objective improvement. Because of the high blood volume and a good response to treatment by destruction of blood these cases are considered as polycythemia vera with associated or complicating pulmonary disease.

Potassium Content of Heart.—The results of analyses made by Scott of thirty-two hearts for potassium and sodium do not seem to indicate that there is on an average any appreciable difference in the amount of these elements in hearts from edematous and from nonedematous patients. The water content is practically the same for the two categories. There is considerable variation in the amount of potassium and sodium in hearts, regardless of whether the disease processes from which the patients died were or were not productive of edema. The percentage of sodium may be greater than that of potassium and vice versa without any apparent relation to disease. Demonstration of potassium in cardiac tissue indicates that the larger proportion of the salts is contained in the fluid bathing the muscle cells and that they are rather uniformly diffused throughout the protoplasm.

Terminal Hypoglycemia.—Blood chemistry determinations have been made by Schmidt before, at and one hour after death on thirty-three nondiabetic patients dying in the hospital. Among these thirty-three unrelated cases, twelve cases or 36 per cent showed low terminal blood plasma sugars ranging from 28 to 75 mg per hundred cubic centimeters at the moment of death. In a number of cases it was demonstrated that this pronounced and suggestive hypoglycemia existed before death as well as at death. Only a slight decrease was noted in the blood sugar during the hour immediately following death although there were two noteworthy exceptions in which the sugar of the heart blood decreased from 154 to 50 mg and from 166 to 33 mg. The blood urea frequently increased rapidly just prior to death, but little change took place after death. Frequently there was a terminal rise in amino acid nitrogen which continued to increase somewhat after death. The carbon dioxide combining power of the plasma decreased somewhat shortly after death, but the chlorides remained unchanged.

Liver Extract for Pernicious Anemia.—One hundred and one patients with typical pernicious anemia were treated by Zerfas with potent fractions of liver. Sixty-one of these patients were given adequate daily amounts of a standardized fraction of liver. The results obtained relative to the production of reticulocytes are in accord with those reported by Minot and his associates. The maximum number of reticulocytes produced at the peak of their increase was influenced by the level of the red blood cells before treatment was begun and by the daily amount of potent extract of liver ingested. In uncomplicated cases the amount of extract (approximately 12 Gm) derived from 300 Gm of liver produced a slightly submaximal number of reticulocytes on the day of the peak; however the number of red blood cells produced at the end of one month was essentially the same as that produced when larger daily amounts of extract (that derived from 400 to 1,000 Gm of liver) were given. The average gram in red blood cells at the end of one month's treatment for the entire series of 101 patients bore an inverse relation to the level of the red blood cells before treatment was begun. In the patients whose red blood cell counts were below 5 million per cubic millimeter of blood before treatment, the count reached approximately a level of 35 million at the end of one month. The number of reticulocytes produced at the peak of their rise combined with information relative to the rate of red blood cell production for the first month of treatment seems a useful means of determining the potency of fractions of liver.

Bacillus Pyocyaneus Meningitis.—The case presented by Virelizier et al is said to be of especial interest because of the following factors: (1) primary *Bacillus pyocyaneus* meningitis with minimal systemic and localizing symptoms and with no recognized portal of entry; presumably the infection entered through the lymphoid tissues of the upper part of the respiratory tract or through similar tissues of the digestive tract such as the Peyer's patches; (2) absence of the three recognizable etiologic factors found in other cases in the literature namely trauma to the brain or spine, lumbar puncture or *B. pyocyaneus* septicemia; (3) seemingly good therapeutic results from decompression; (4) evidence of the local character of the infection as seen in the development of agglutinins in the spinal fluid but not seen in the blood stream; and (5) rapid recovery in contrast to the two other general types of cases heretofore described, rapid and fatal progression, a long drawn out recrudescence illness, and evidence that even in *B. pyocyaneus* meningitis one is dealing with an organism of relatively low virulence.

Archives of Otolaryngology, Chicago

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- Radical Mastoid Operation J M Smith, New York—p 28
- *Acoustic Recurrences Entirely Due to Faulty Operative Technique? A Fishman and S J Pearlman Chicago—p 37
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Maldevelopments of Auricle, External Meatus and Middle Ear.—Fraser states that the condition of microtia and mental atresia is not rare. It occurs more frequently in males than in females and more often on the right side than on the left. Unilateral cases are more common than bilateral. In rare instances the condition occurs in more than one member in a family. Facial paresis, maldevelopment of the mandible, facial hemiatrophy and other congenital deformities are not infrequently noted in association with microtia and mental atresia. Hearing tests usually show the results obtained in lesions of the sound-conducting apparatus but even in bilateral cases the human voice is, as a rule, heard well enough to allow the patients speech to develop. Functional examination by means of the rotation tests shows as a rule that the vestibular apparatus is normal. Operation should be performed in unilateral cases only when otitis media and mastoiditis are present on the affected side. In other unilateral cases the improvement in hearing is not sufficient to justify operation. In bilateral cases operation is called for only if the deafness is marked and if roentgenograms and functional examination show that the labyrinth is healthy.

Radical Mastoid Operation.—A review by Smith of the best surgical procedures advocated for relief from chronic antral suppuration during the last twenty years reveals the fact that in the early part of this period a large majority advised the radical operation. Later there was a gradual change with a progressive improvement in the sentiment toward the various modifications of the radical operation. The danger at present is that the pendulum may swing too far in that direction. During the whole period there was always the possibility of being misled by the overenthusiastic advocates of the operation, as well as by those who professed to believe that the radical operation is never indicated. The old adage that the point of safety lies somewhere between the two extremes applies here. The temporal bone shows a wide variation within its normal anatomic limits from the small infantile type with a complete absence of cells or mastoid cavity to the large pneumatic bone with an extensive cellular development and mastoid cavity. There must necessarily be a marked variation in the degree of bone destruction encountered in the different cases. There may be an extensive destruction of the drum membrane and ossicular chain with little or no involvement of the mastoid structures, or the reverse may be true with an extensive destruction in the mastoid and the ossicular chain intact. It is evident that a different type of operation is indicated in these cases. It will therefore be impossible to employ an one-particular operation in all cases and it becomes a question of adapting the operation to the case. When there is little or no destruction of the ossicular chain some otologists prefer to lower the posterior wall of the ossicles to remove and cut a flap. In these cases the author prefers to perform a complete simple mastoidectomy, and the aditus wide expose the antrum, remove all the granulation tissue and treat the wound as a simple open wound. Lowering the wall or cutting a flap. Occasionally the granulation removed from the antrum and obtained a dry ear. When the malus and incus require removal and the posterior wall of the canal is intact, he performs a new radical operation by complete removal of the diseased structure in the mastoid and

middle ear without removing the wall of the canal. In this manner the cavity and flap of the radical operation are avoided and the hearing results are improved. For the extensive infections in which these modifications are not adequate, a complete radical operation should be performed. The radical operation has a definite place in surgical otology, one that can never be replaced. Its technique makes it possible to obtain the most complete excitation of the diseased structures. There will always be certain cases which demand this operation; there will be others in which a less extensive operation will suffice. The fact seems to be definitely established that both the radical operation and some of the more conservative procedures have their selective indications. In many instances the absence of symptoms other than the foul smelling discharge makes it impossible to determine the extent of the necrosis before operation; on the best policy would seem to be to allow the degree of bone destruction in the individual case to dictate the type of operation and to be able to perform the one that seems to promise the best results.

Are Tonsillar Recurrences Entirely Due to Faulty Operative Technique?—Leshm and Pearlman call attention to extratonsillar tissues which often contain lymphoid tissue embedded in their layers and which are frequently neglected by many in routine tonsillectomy. Furthermore, following tonsillectomy in which the main tonsil mass is apparently completely removed in those instances in which the pharynx are well developed sites for possible future lymphoid hypertrophy are still left in nearly 50 per cent of all cases. Whenever these pharynx are well developed and this applies particularly to the pharynx triangularis, they should be removed separately. There is no method of tonsillectomy that insures the patient positively against the future recurrence of lymphoid tissue at the site of operation. This statement is based on histologic evidence of the presence of lymphoid tissue surrounding the immediate tonsillar site and is confirmed from embryologic evidence that indicates that the tunica propria of the mucosa in this entire region contains lymphatic structures with marked tendency toward hypertrophy. Epithelialization of the raw operative area occurs as the result of the surrounding mucosa with its tunica propria, growing down into it and retaining in its new site the ability to form lymphoid structures. The occurrence of hypertrophy in some instances and its absence in others is due to constitutional and individual factors as yet not known.

Subcutaneous Mixed Tumor of Face not Associated with Salivary Glands—Brunschwig reports a case of subcutaneous mixed tumor of the face. According to the literature, these are uncommon. Since macroscopic diagnosis is not possible, a routine microscopic examination of all subcutaneous nodules removed from the face at operation would, no doubt, reveal a much greater incidence of this condition. Mixed tumors are potentially malignant and when present should be treated as such by thorough excision and prophylactic irradiation of the site occupied by the neoplasm. Since, therefore, many apparently benign nodules about the face may be potentially malignant neoplasms, their removal is recommended on the slightest pretext.

Roentgen Diagnosis of Disease at Base of Skull—For a general survey of the main structures at the base of the skull, Pomeranz considers two views necessary: one in the frontal direction and the other in the sagittal direction. The view taken in the frontal direction will, as a rule, disclose the changes of the sella, the general type of the skull and the thickness of the flat bones and their digital impressions. It sometimes occurs that the anterior clinoid processes are obscured by each other, then another view taken in a slightly (5 degrees) inclined position is necessary to separate them on the plate. The sagittal view should be obtained so that the central ray takes the direction of the German horizontal, i. e. the imaginary line connecting the upper walls of the external auditory canal with the lower orbital margin. The sagittal view may be taken in either the anteroposterior or the posteroanterior direction. In this view, if properly taken, one will see the pyramids in the lower third of the orbits, the foramen rotundum, small wings, large wings as a part of the orbital wall, superior orbital fissure, lamina papyracea, ethmoid bone and cells and often the sphenoid sinus. These two views will give a good general survey of the base of the skull. Of the numerous special views cited, three are par-

ticularly important. 1 The basal view of the middle fossa (Schuller), which should be taken in the submentobregmatic direction. If the patient cannot assume this position, this view can be taken in the opposite direction. In such a case the part of the middle fossa is obscured by the shadow of the mandible. In this view the main structures of the middle fossa are visualized: the foramina optica of the pyramids, sphenoid sinus, carotid groove, clinus and base of the pterygoid process (tumors of the nasopharynx). 2 The Stenvers view of the pyramids. The central ray is perpendicular to the longitudinal axis of the pyramids. This view gives a general survey of the pyramids and the outline and details about the inner ear, one can discern the semicircular lateral and superior canals, vestibulum cochlear, internal meatus and apex of the pyramids. Often this view has to be supplemented by Schüller's and Mayer's view of the mastoid part and of the tympanum. Mayer's view is taken in such a manner that the central ray is parallel to the longitudinal axis of the pyramids, aiming at the external auditory canal. It gives a good view of the tympanum, sigmoid sinus, antrum mastoideum and cells. Schüller's view is the routine lateral view of the pyramids. 3 The oblique view of the orbit by Rhese, modified by Gorkin. This view visualizes the optic canal. It is of diagnostic value only in selected cases. All the views described are necessary for visualization of the base of the skull. For the sinuses, particularly the maxillary sinus, the visualization of which was poor from the diagnostic standpoint, Mayer used the craniocentric view of Lisenfeld. This view projects the sinuses downward on the plate, partially distorting them. It has, however, the advantage that all the bony structures of the base of the skull (particularly the pyramids), which otherwise obscure the sinuses are projected downward. In the author's opinion it is not advisable, for several reasons, to use the Bucky diaphragm in the diagnosis of disease of the skull. The structure of the bones is coarse in comparison with its appearance in plates taken without the Bucky diaphragm. With the diaphragm in the special positions that are so important for diagnosis, roentgenograms cannot be taken on account of the excessive angulation of the central ray to the grids. It is also not advisable to use large distances and large cones in this work. The large distances will make one's interpretation of the film much more difficult; with large cones, the roentgenograms will not be sharply defined owing to an excessive amount of secondary rays. The use of small cones is best. It is also important to study a film with a skull in one's hand, first acquainting oneself with the method of projection used in the individual view.

Effect of Epinephrine and Ephedrine on Nasal Mucosa—Fox performed two series of experiments on rabbits to determine whether solutions of ephedrine and epinephrine, which are frequently prescribed over a long period in chronic nasal obstruction, are deleterious after long usage. He found that ephedrine hydrochloride in dilutions of 1:50, when sprayed daily over the mucous membrane of rabbits for three months caused little injury if any, to the tissues. Epinephrine chloride in dilutions of 1:1,000, when sprayed daily over the mucous membrane of rabbits for three months, caused considerable injury of these tissues.

Arch of Physical Therapy, X-Ray, Radium, Chicago

12:160 (Jan.) 1931

- Symposium: Tonsils. Clinical and Bacteriologic Examination of Fauces.
Tonsil. R. H. Fraser, C. E. Roderick, J. Williams and I. Maxson.
Battle Creek, Mich.—p. 3.
Electrosterilization of Tonsils. W. I. Cahall, Uter, N. J.—p. 8.
Evaluation of Electrosurgery of Tonsils. I. B. Balmer, Chicago—p. 10.
Radium Treatment of Infected Tonsils. J. H. Vaughan, Amarillo, Texas.
—p. 15.
Trysipelas. W. H. Ude, Minneapolis—p. 16.
Postoperative Physical Aids in Otolaryngology. A. R. Hollender, Chicago.
—p. 19.
Treatment of Laryngeal Tuberculosis. F. E. Glenn, Mount Vernon, Mo.
—p. 23.
Radium in Dermatology. R. Fields, Washington, D. C.—p. 26.

Arkansas Medical Society Journal, Little Rock

27:161-175 (Jan.) 1931

- Spinal Anesthesia. D. E. White, El Dorado—p. 161.
Hysteria. T. Cothern, Jonesboro—p. 168.
140 Cases of Streptococcal Infection of Tonsils with Unusual Course and Termination. B. H. Hawkins, Mena—p. 169.

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- Control of Gonorrhea in Women W W Lailey Toronto—p 1
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 Lactose Broth and Lactose Bile as Enrichment Media for Detection of Pollution in Farm Well Waters A G Lochhead and D G Hewer Ottawa, Ont.—p 10
 What is Stillbirth? E Gagnon Montreal—p 16
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- Obstruction of Bowel J S Turberville Century—p 311
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 Our Heritage R J Holmes Miami—p 320
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 Theory and Application of Schilling Blood Picture W C McConnell St. Petersburg—p 326

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- Health Habits for Children M M McCord Rome—p 1
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 Alimentary Anemia W W Anderson Atlanta—p 6
 Value of Graded or Multiple State Measures in Surgery B H Clifton Atlanta—p 12
 Diagnosis and Treatment of Ruptured Gastric and Duodenal Ulcers H H Aikew Atlanta—p 14
 Diagnosis and Treatment of Thyroid Diseases W A Coleman Eastman—p 17
 Chronic Kidney Disease Nephrosis H C Atkinson Macon—p 19
 Syphilis Early Diagnosis and Treatment W A Upchurch Atlanta—p 23
 Postoperative Pulmonary Embolism J D Martin Jr Atlanta—p 26
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 Principles in Disease Prevention J D Applewhite Macon—p 28
 Postural Drainage as Applied in Abortion and Obstetric Cases N W Baird Atlanta—p 31

Iowa State Medical Society Journal, Des Moines

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- Care of Indigent Sick by Medical Society Contract R L Parker, Des Moines—p 15
 Functional Disorders of Heart F A Willius Rochester Minn—p 21
 Birth Injuries C E Hill Council Bluffs—p 24
 Diabetes Mellitus Case Showing High Blood Sugar, Insulin Resistance and Effect of Infection upon Carbohydrate Tolerance F L Dunn Omaha—p 26
 Production of Proteose Toxic Fraction and Effect of Diverting Portal Circulation on Its Toxicity J T McClintock Iowa City—p 27
 Schilder's Disease (Periaxialis Encephalitis Diffusa) Living Case M L Floyd Iowa City—p 27
 Inaccuracy of Diagnosis of Tuberculosis of Bone, Joint Bursae J E McIlgram Iowa City—p 29

Johns Hopkins Hospital Bulletin, Baltimore

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- *Congenital Syphilis of Adrenal G L Fite Baltimore—p 1
 Cells Found in Tuberculous Tissues Vital and Supravital Staining E H Tompkins and R S Cunningham Nashville Tenn—p 8
 Di Hydranol Control of Intestinal Putrefaction in Man by Oral Administration of 2,4 Dihydroxyphenyl N Heptane V Leonard and W A Feiler Baltimore—p 25
 *Carcinoma of Stomach in Seventeen Year Old Girl A Marble Baltimore—p 39

Congenital Syphilis of Suprarenal Gland—The suprarenal glands from some 250 cases of congenital syphilis were examined by Fite. In only about 40 of these was there any abnormality whatever of the cellular structure of the gland to be observed, but some of the latter showed most striking changes attributable to syphilis. About half of the cases have been in still born infants. Most of the other subjects had died in the first month or two of life, and the oldest had died at 7 months of age. In none of these 250 cases, nor in some 150 others which defied microscopy on account of poor preservation, were any macroscopic gummas of the suprarenal gland seen.

Carcinoma of Stomach in Seventeen-Year-Old Girl—The patient whose case is reported by Marble was a girl aged 17 when first seen. The total duration of the disease from the onset of symptoms was about thirty-three months; the length of time after partial gastrectomy was twenty-two months.

Journal of Bone and Joint Surgery, Boston

13 1222 (Jan.) 1931

- *Fixed Paralytic Obliquity of Pelvis L Mayer New York—p 1
 *Low Back Pain 525 Cases of Sacro-Iliac and Sacrolumbar Sprain L J Miltner Peiping China and C S Lowendorf Iowa City—p 16
 Dislocation of Femur upon Acetabular Notch in a Pre Roman Briton M F Ashley Montagu London—p 29
 Modified Bifurcation Operation for Treatment of Painful Congenital Dislocation of Hip R Massart Paris—p 33
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 Diagnosis Pathology and Treatment of Fractures of Os Calcis L Bohler Vienna Austria—p 75
 Stenosing Tendovaginitis at Radial Styloid Process P Hoffman St Louis—p 89
 *Scoliosis Treated by Fusion Operation R A Hibbs J C Risser and A B Ferguson New York—p 91
 Importance of Capsule Attachments in Reduction of Congenital Dislocations of Hip F C Kidner Detroit—p 104
 *Peg Leg Cast W P Blount Milwaukee—p 107
 Modified Loop Operation for Relief of Paralytic Equinovarus A Whitman New York—p 122
 Macrophage in Absorption from Synovial Cavity E H Ryencarson Rochester Minn—p 127
 Ambulatory Treatment of Fractures of Lower Extremity R S Perkins and J P Mulhern Worcester Mass—p 138
 Modified Bone Block (Campbell) of Ankle for Paralytic Drop Foot L C Wagner New York—p 142
 Tumors of Nerve Sheaths of Extremities Neurogenic Sarcomas E M Bick New York—p 149
 Complete Absence of Both Legs—Congenital G V Foster Pittsburgh—p 154
 Tuberculous Tenosynovitis of Palmar Synovial Bursa Compound Palmar Ganglion A Gillies Wellington New Zealand—p 156
 Continued Growth After Loss of Bony Epiphysis C B Bennett Berkeley Calif—p 158
 *Supination Sign R M Yergison Hartford Conn—p 160
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 Measuring Length of Lower Extremities New Method E P Bismarck N D—p 169
 Bone Lengthening Apparatus B H Moore Chicago—p 170
 Derotating Chair for Treatment of Scoliosis C A Ryan Vancouver B C—p 172
 *Sam Browne Belt for Rib Fractures R V Funston Detroit—p 174
 Attachment to Hawley Table for Fixation of Lower Extremities H E Conwell Fairfield Ala—p 175
 Corrective Support in Scoliosis C W Peabody Detroit—p 177

Fixed Paralytic Obliquity of Pelvis—Fixed obliquity of the pelvis, as contrasted with obliquity due to actual shortening of a leg, Mayer says, is caused by a contracture of the structures connecting the pelvis and the thigh or the pelvis and the spine. It is characterized by the fact that when both legs are held parallel to the median line of the body, it is impossible to square the pelvis, even when the patient is in the recumbent position. Its practical significance is due to the apparent difference in the length of the legs which it causes. The type may be distinguished (1) due to contracture of the abductors (2) due to contracture of the adductors, (3) due to contracture of both abductors and adductors, (4) due to contracture of spinal and abdominal muscles, and of the quadratus lumborum (5) combinations of groups 1, 2 or 3 with group 4. The deformity can be corrected in the early cases by a push and pull apparatus, in the more advanced cases by suitable division of the contracted structures, coupled with stabilizing procedures to prevent recurrence of the deformity.

Low Back Pain—Analysis of statistics made by Miltner and Lowendorf show that the causes for low back pain in order of relative importance are (1) arthritis (1,350 cases), (2) sacro iliac sacrolumbar and combined sprains (525 cases), (3) muscle strain (100 cases), (4) lumbar myositis (25 cases), (5) other unusual conditions, as spondylolisthesis fractures of the transverse processes, fractures of the articular facets, undiagnosed fractures of the vertebral bodies and Kummell's kyphosis (50 cases). The study is concerned chiefly with low back pain due to sacro iliac, sacrolumbar or combined sacro iliac and sacrolumbar sprain (525 cases). In well over 50 per cent of the cases symptoms persisted into the chronic stage. Especially in the postural and occupational group were the symptoms found to continue over a period of years. Eight cases (15 per cent) had a definite psychoneurosis which was entirely

responsible for the pain. Certain symptoms, such as the radiation of the pain and the posture assumed, seemed to bear a definite relation to the type of sprain. The sacro iliac cases were more apt to have sciatic radiation (64.1 per cent as compared with the sacrolumbar cases, 21.9 per cent). Radiation into the areas of the lumbar nerves was present in 7 per cent of the sacro iliac cases and in 3.4 per cent of the sacrolumbar sprains. Pain in the course of the superior gluteal nerve was present in 6.1 per cent of the sacro iliac and in 2.6 per cent of the sacrolumbar cases. Concerning the posture assumed by the patient the unilateral sacro iliac case frequently showed a contralateral tilt or position of relief (24 per cent). A smaller proportion of unilateral sacro iliac cases showed a list to the same side as the sprain (homolateral 8 per cent). In explanation of the contralateral list, the patient leans to the opposite side to relieve the strain on the affected joint. Homolateral list is usually seen when there is an associated sprain on the same side as the pain. Trauma posture and occupational factors are the most important considerations in the etiology. In the chronic cases, i. e., those in which the symptoms persist over six months, the differentiation from chronic arthritis becomes very difficult. The differential diagnosis between sacro iliac and sacrolumbar sprain is based on (a) local points of tenderness which are anatomically separate, (b) localization of the pain (subjective), (c) the use of special tests as the Laguerre Goldthwait and Grienslen tests, straight leg raising and forcible compression of the iliac crests. Roentgen observations are not particularly important in the differential diagnosis and can be used only as confirmatory evidence after the essence of the treatment in the acute cases is complete and sufficient rest. Supports, belts, casts, braces, recumbency and traction may be used in the chronic cases. Physical therapy is recommended for all cases. Manipulation of the spine and sciatic stretching give good results in selected cases. In chronic persistent cases of lumbosacral and sacro iliac pain, operation is advised.

Spondylolisthesis—Data presented by Meyerding do not bear out observations by others that spondylolisthesis is more common in females, about 62 per cent of the patients in his series were men. Trauma appears to be a significant factor in the etiology, although the frequency of congenital defects and the apparent instability of the lumbosacral joint are additional factors. About 38 per cent of the patients ascribed the cause to trauma. Symptoms are mainly backache, which comes on either gradually or suddenly, if suddenly, severe trauma is usually associated. The absence of symptoms with the patient at rest, and aggravation of pain on exertion, are characteristic. Patients are treated by casts, braces, corsets, or fusion of the third, fourth and fifth lumbar vertebrae and the upper part of the sacrum.

Blood Serum Calcium Healing of Fractures—The results of several hundred blood determinations made by Speed on fracture patients show that immediately after fracture the blood phosphorus is low, the blood calcium is normal, the average admission calcium-phosphorus product is within normal limits, from 36 to 40, within twenty-four hours after any major fracture the blood serum phosphorus content rises and remains high, coming down slowly, possibly varying with the period of disability from three to five weeks. Increased muscular exercise may hasten this. The blood serum calcium content remains about stationary, diet has little or no effect on either calcium or phosphorus content of the peripheral blood after any operative procedure there is an almost immediate rise in blood serum phosphorus followed by a rapid fall to normal. Experimental work done on dogs showed that in healthy dogs reduction of blood serum calcium and phosphorus or elevation of blood serum calcium and reduction of phosphorus have no consistently demonstrable effect on the healing of experimental fracture even after a considerable period of time or with a reduction which gives a numerical product of less than 30 amounts of each per hundred cubic centimeters of blood serum being taken. After thyroparathyroidectomy, however, with resulting lowering of blood serum calcium and raising of blood serum phosphorus even when the product does not get anywhere near as low as 30 there is great delay in bony union after experimental fracture in dogs. Taking average human beings suffering fracture it

seems then impossible to prognosticate delayed union or non union after fracture by any estimation of blood serum phosphorus calcium content or their numerical product.

Influence of Alterations in Circulation on Repair of Bone—Perrse and Morton have shown previously that blocking the deep veins to produce venous stasis at the site of healing results in an increased callus formation and accelerated bone repair. This is a useful procedure in treating delayed union of fractures. Obstruction of the lesser saphenous vein has no influence on the healing of the fibula. Blocking the arterial circulation by ligation of the main trunk has no effect because of the rapid development of collateral circulation. When the main artery and its branches are removed there is delay in bone repair, but healing eventually takes place. Removal of the lumbar sympathetic trunk and ganglions makes little change in the process of bone repair in the extremity.

Scoliosis Treated by the Fusion Operation—Study of the end results in 360 cases leads Hibbs et al. to the conclusion that spine fusion is indicated in the treatment of scoliosis (a) to prevent increase of deformity in the progressing scoliotic, (b) to maintain a previously gained correction, (c) to relieve pain in a progressive lateral curvature. To accomplish this, constant support of the correction should be applied for from six to twelve months after operation. In order not to lose preoperative correction, the operation is performed through a posterior fenestration of the corrective cast. The area of fusion should be correctly selected identified at operation, and adequate in length. The best form of correction of lateral curvature in their hands is a combination of head and pelvic traction with complete lateral bend. This is accomplished by the use of an anteroposterior hinge turnbuckle jacket. The increase of lateral curvature is closely associated with the skeletal of the spine.

Peg Leg Cast—The peg leg cast is recommended by Blount for the ambulatory management of many hip abnormalities in children. It is desirable when simple fixation in abduction is sought, and it has been used to advantage postoperatively. In the treatment of chronic hip infections with shortening and vicious adduction, it is the method of choice for the correction of position and immobilization of the hip. It is specifically indicated during the active stages of coxa plana and coxa vara.

Supination Sign—Yeigerson states that if the elbow is flexed to 90 degrees, the forearm being pronated, and the examining surgeon holds the patient's wrist so as to resist supination and then directs that active supination be made against his resistance, pain definitely localized in the bicipital groove indicates a condition of wear and tear of the long head of the biceps, or synovitis of its tendon sheath. The sign will be found negative in cases of partial or complete rupture of the supraspinatus tendon. This sign has been found useful in cases of shoulder injury.

Journal of Preventive Medicine, Baltimore

- 5 180 (Jan.) 1931
 Ultraviolet in Solar Radiation I. Observations in Honolulu Measure-
 ment by Oxalic Acid Method L. S. Godfrey Honolulu—p. 1
 Id. II. Comparison of Different Localities Near Pacific N. P. Larsen
 and L. S. Godfrey Honolulu—p. 25
 Acquired Immunity in Avian Malaria III. Cellular Reactions in Infec-
 tion and Superinfection P. R. Cannon and W. H. Tahaferro
 Chicago—p. 37
 *Complement Fixation Tests with Yellow Fever Antigens M. Frohisher
 Jr. Bahia Brazil—p. 65

Complement Fixation Tests with Yellow Fever Antigens—The complement fixation test for yellow fever as performed by Frohisher has given about 87 per cent correct reactions with serum from 159 human beings and 175 monkeys. It is believed that, in view of difficulties in clinical interpretation and the natural immunity of monkeys, the figures expressing the accuracy of the test should actually be about 90 per cent. The complement fixation tests in which yellow fever antigens are used appear to be highly specific for yellow fever. There is no good evidence of undue interference with the test by other diseases nor does there seem to be any good reason for such interference. However, it is possible that the presence of certain diseases, especially syphilis, may sometimes cause falsely positive reactions. Complement-fixing bodies appear to reach a maximum concentration in the blood of monkeys after the lapse

of from thirty to forty days. They seem to remain in the blood stream for periods varying from a few months to more than a year. In tests of monkeys for immunity to yellow fever it is believed that more reliable results will be obtained if the serum is not drawn until after thirty days following infection. The same probably is true also of human beings. Experiments have confirmed the observation of Davis that previously actively immunized monkeys in which the titer of complement-fixing bodies has declined to a vanishing point because of age will respond to second injections of virus with a production of complement-fixing bodies in the absence of fever. It is suggested that this may indicate one of three possibilities: (1) an obscure second infection which does not manifest itself clinically, (2) an allergic reaction, (3) the development of complement-fixing bodies as a result of the presence of the virus as a foreign protein, in which case the complement-fixing bodies might be distinct from the protective bodies.

New York State Journal of Medicine, New York

11 65 130 (Jan 15) 1931

- Dermatology in Relation to Metabolic Disturbances W J Highman New York—p 65
So Called Jamaica Ginger Paralysis Case G Wilson Philadelphia—p 70
Postoperative Fmesis J C Brady Buffalo—p 72
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Leukosarcoma with Mediastinal Tumor B L Zohman Brooklyn—p 83
Clinical Significance of Abdominal Pain in Children E J Wynkoop Syracuse—p 86
Influence of Nutrition upon Respiratory Infections of Infancy S W Clausen Rochester—p 88
Physical Therapy in General Practice C E Anderson Elmira—p 93

Public Health Reports, Washington, D C

46 149 205 (Jan 23) 1931

- *Incidence of Influenza Among Persons of Different Economic Status During Epidemic of 1918 E Sydenstricker—p 154

Influenza Among Persons of Different Economic Status During Epidemic of 1918—Sydenstricker states that perhaps no observation during the great influenza epidemic of 1918-1919 was more common than the familiar comment that 'the flu hit the rich and the poor alike.' Apparently there was ample ground for a belief in the impartiality of the disease. Its widespread prevalence throughout the country, the frequency with which households in every social class were attacked, and the fact that prominent persons in every community were struck down, were among the outstanding, undeniable experiences in the epidemic. A certain consolation seemed to be afforded by the thought that the pestilence was democratic, even in so dreadful a sense, in its behavior. Like many conclusions based on general impressions, this observation was true only in part. Epidemic influenza undoubtedly was prevalent among all classes of persons and its mortality toll was levied from the wealthy as well as from the poor. But when the generalization was subjected to the closer analysis afforded by actual records of influenza incidence in 1918 in enumerated populations, the interesting indication appeared that there were marked and consistent differences in its incidence—with respect both to morbidity and to mortality—among persons of different economic status. An association between the incidence of epidemic influenza and economic condition was manifested. Apparently the lower the economic level the higher was the attack rate. This relationship was found to persist even after allowance had been made for the influence of the factors of color, sex and age and certain other conditions.

Rhode Island Medical Journal, Providence

14 116 (Jan) 1931

- Pituitary and Some Features of Tumors in Pituitary Region H C Messenger Providence—p 1
Weber's Diphtheria Record S C Webster Webster—p 5

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

1 125 164 (Jan 24) 1931

- *Laboratory and Hospital Infections with Yellow Fever in England G C Low and N H Fairley—p 125
*Malignant Disease of Lung A T Edwards—p 129
Cataract Operation in Extreme Old Age R H Elliot—p 132
*Hydatid Disease in England J F Brailsford—p 133
*Mennicke Clarification Reaction D Prentice—p 136
*Ovarian Transplantation J H Hannan—p 137

Infections with Yellow Fever in England—Three cases of direct infection with a Brazilian strain of yellow fever are recorded in laboratory workers in London by Low and Fairley. Two of the patients never came into contact either directly or indirectly, with infected monkeys, they acquired the disease during routine hospital examinations: one in making blood slides and performing a white cell count, the other in doing routine biochemistry on a specimen of blood sent to the laboratory. The incubation period in both cases was ten days. Monkey inoculation showed that the blood of one patient was infective for at least eighty-nine and one-fourth hours after the onset of fever, despite the earlier injection of immune convalescent serum. The hitherto little appreciated danger of routine blood examination in cases of yellow fever during the first four days' illness, and probably also in the incubation period, is emphasized. It is strongly urged that in endemic areas when yellow fever is prevalent gloves should invariably be worn when taking blood, whether or not the case is suspected of being yellow fever.

Malignant Disease of Lung—Edwards states that the onset of malignant disease of the lung is generally gradual and insidious but sometimes is initiated by a pyrexial attack commonly labeled influenza. For months, the history in others may disclose nothing except increasing lassitude without localizing symptoms. This symptom is later accompanied by dyspnea or nonproductive cough, both tending to become worse. The general appearance is often good and weight may even be gained at this period. Hemoptysis occasionally occurs early. Irregular pyrexia may be an early symptom but the temperature is rarely high until the later stages when there is retention of secretions, or when necrosis has occurred in the center of the growth. A sudden attack of hemoptysis, associated with the expectoration of a quantity of purulent sputum, occurs occasionally in malignant disease and tends to confuse the condition with pulmonary abscess especially as it is often preceded by a rise and succeeded by a fall of temperature. Pain is rare in the early stages but until the pleura or mediastinum is involved is never severe. Dysphagia occasionally results from the pressure of secondary deposits in mediastinal lymph nodes on the esophagus and hoarseness from pressure on, or involvement of the left recurrent laryngeal nerve. The signs vary according to the type of the disease. In the bronchial growths the physical signs are those of pulmonary atelectasis, bronchial breathing of a blowing type, some dullness and often increase of voice sounds when the obstruction is incomplete, with dullness and weakness or absence of breath and voice sounds when complete bronchial obstruction is present. In the central or alveolar type, physical signs may be absent or may consist of localized dullness associated with weakness of breath and voice sounds. Extrapulmonary signs should also be sought for, such as enlarged supraclavicular lymph nodes and paralysis of the homolateral diaphragm due to involvement of the phrenic nerve. Evidence of venous obstruction, such as dilatation of the superficial veins of the chest and the veins of the upper limb and neck is comparatively rare in pulmonary neoplasms. Effusions of the pleura are usually late and are often hemorrhagic. Bronchiectasis secondary to the obstruction results in a proportion of cases and its symptoms may mask those of the initial lesion. The fact that the signs are atypical of any of the common lung diseases should immediately suggest the possibility of malignant disease of the lung. Diagnosis may be confirmed by further investigations. These comprise roentgen examination before and after pneumothorax and the introduction of iodized poppy seed oil into the bronchi, bronchoscopy, thoracoscopy and finally, exploration of the thoracic cavity. In the past when a diagnosis of malignant disease has been established the tendency has been to abandon all

hope As diagnosis is becoming possible at an earlier stage, some definite efforts should be made to deal with the problem of malignant disease of the lung in a more active way than by palliation of symptoms alone

Hydatid Disease in England—According to Brailsford, hydatid disease which is not rare in England and which has a high mortality rate could be eradicated by the burning of all hydatid cysts and the isolation of infected dogs until all adult parasites have been expelled and destroyed This could be accomplished by (a) Education of the public particularly butchers and farmers, by suitably illustrated leaflets and posters for slaughterhouse premises (b) Strict enforcement of the by laws prohibiting dogs in slaughterhouse premises (c) Compulsory notification of all cases of hydatid cysts and the destruction of the cysts by the sanitary authorities (d) The inspection of farms on which the infested animals were reared and isolation treatment of all suspicious dogs

Meincke Clarification Reaction—Prentice advocates simplification of the Meincke clarification reaction by eliminating three of the tubes containing serum (A, B and C) and using only tube D Its micromodification is rapid in operation, gives a high percentage of agreement with the Wassermann reaction, is very sensitive and is easy both to perform and to read As a routine test for syphilis in the patients in a mental hospital, it offers advantages over any other test It has proved reliable

Ovarian Transplantation—Allowing that surgical technique may develop to such an extent that the blood supply and drainage can be assured by the anastomosis of the vessels of the transplanted ovary to the vessels of the bed in which the transplant rests, Hannan does not believe that there is any hope of being able to deal effectively with the lymphatic supply and drainage With regard to the nerve supply, even if it were possible to anastomose the nerve supply of the transplant to the nerve supply of the bed, regeneration of the anastomosed nerves would take place only a considerable time after trophic changes had occurred in the transplant He therefore considers that the transplantation of a compound gland, such as the ovary, is of no value, since its physiologic activity cannot be maintained Moreover, a consideration of the anatomy and physiology of a compound gland such as the ovary, and of modern surgical research on compound glands in general, affords no prospect of successful ovarian transplantation in the future

Indian Journal of Medical Research, Calcutta

18 1436 (Dec) 1930

*Parasitology of Malaria R Knowles R S White and B M Das Gupta—p 1

Parasitology of Malaria—According to Knowles et al the distribution of malaria in general throughout the world is limited by the summer mean isotherms of 60 F The distribution of *Plasmodium falciparum* throughout the world is limited by the summer mean isotherms of 70 F It is shown that in Australia the malaria parasites appear to have only recently gained a footing and to retain still their northern hemisphere rhythm They may be expected to extend their distribution over this continent unless artificially checked The distribution of *Plasmodium malariae* throughout the world suggests that this is a dying species with existing foci at the Burma-Yunnan frontier, the relics of Gondwanaland, and the Caucasus The relative proportion of the three species within the area bounded by the 70 F summer isotherm should theoretically be *Plasmodium vivax* 39 per cent, *P. malariae* 18 per cent and *P. falciparum* 43 per cent The actual proportions were quite different, being *P. vivax* 43 per cent, *P. malariae* 8 per cent, and *P. falciparum* 49 per cent From this it is concluded that the factors governing the relative distribution of the three species are not yet at all understood Mixed infections constitute about 37 per cent of the general malaria of the world and are distributed as follows *P. vivax* plus *P. malariae* 9 per cent, *P. vivax* plus *P. falciparum* 79 per cent *P. malariae* plus *P. falciparum* 10 per cent *P. vivax* plus *P. malariae* plus *P. falciparum* 2 per cent The relative gametocyte output of the three species is for *P. vivax* 21 per cent, *P. malariae* 45 per cent and *P. falciparum* 19 per cent Great variations are found especially in the case of *P. falciparum* The conclusion of Sinton that the maximum output of gametocytes by *P. falciparum*

occurs after the close of the transmission season is confirmed A preliminary study of untreated cases of malaria by enumerative and cultural methods leads to the belief that usually malignant tertian malaria does not persist in an individual in the absence of repeated fresh injections of sporozoites The development of crescents is not associated (in culture) with an increase in the acidity of the environment Growth and development of both schizonts and gametocytes of all three species in culture is inhibited below a pH of 6.0 Given a competent observer, examination of 100 fields of a thin film plus a reasonably careful examination of one thick film will enable a positive diagnosis to be made in 95 per cent of all cases of developed malaria but will discover only 67 per cent of the cases of mixed infection However highly trained the observer, the authors' experiments show that it is utterly impossible to make a species diagnosis from the examination of a single ring trophozoite form They also show that a 95 per cent agreement in diagnosis can be expected from five minutes' examination of a thin film by recognized experts From this it is inferred that the data used can generally be accepted as representing the actual facts as at present known with regard to the distribution of malaria species throughout the world

South Africa Medical Assn Journal, Cape Town

5 132 (Jan 10) 1931

- Periodic Health Examinations J P MacChren—p 3
- Diseases of Myocardium H I Heimann—p 8
- Dissociation and Somnambulism B J F Laubscher—p 12
- Comparison of Action of Plasmochin and Quinine on Uterus D Epstein—p 15
- Symptoms and Diagnosis of Hyperpiesia and Resulting Arteriosclerosis O K Williamson—p 16
- Combined Treatment of Leprosy C H Wildsch and D C Stoute—p 21
- Radical Mastoid Operation on Patient with Latent Malaria H Levi—p 22
- Delayed Toxic Reaction Following Antimony Therapy P Hack—p 22

Tubercle, London

12 193 240 (Feb) 1931

- Tuberculinization and Tuberculosis in Children Under Urban Conditions Contracts R J Matthews—p 193
- *Gelatinothorax Medium for Intrapleural Injection R A Hunter—p 204
- Epidemiology of Tuberculosis of Negroes E L Opte—p 204
- *Bacillus Calmette Guérin Strain of Tubercle Bacillus Effect in Vitro of Environment on Virulence of BCG K T Sasno and E M Medlar—p 214

Gelatinothorax—Because of unsatisfactory results obtained with intrapleural injections of oil, Hunter sought for a substitute that would possess compressive and antiseptic properties A medium was prepared the basis of which is gelatin with acriflavine hydrochloride as the antiseptic The fundamental principle is that the gelatin solution must not solidify in the cavity when injected, and this principle is observed by the percentage of gelatin employed and by superheating so that the solidification properties of the medium may be impaired if not entirely, to a degree It was found that a 5 per cent gelatin solution met requirements, and this was tested by incubating at 30 C for forty eight hours the solution remaining liquid at this temperature giving a margin of at least 7 degrees centigrade This gelatin is not the nutrient gelatin employed for the growth of bacteria, but ordinary sheet gelatin dissolved in physiologic solution of sodium chloride The dilution of acriflavine employed is 1:2,000, and the preparation is adjusted to pH 8.0 This medium keeps indefinitely Solidification never occurs over 30 C It is usually solid before using, and is heated and liquefied in a water bath to a temperature of approximately 45 C The medium should be slightly above blood heat when withdrawn (by syringe) from the bottle When cool, phosphates may appear as a sediment in the bottle but they disappear on heating It would be unwise to attempt to clear this medium with egg albumin as performed in the preparation of nutrient gelatin for bacteriologic purposes This gelatin acriflavine preparation was tested for its action on a pyogenic organism as follows Five cubic centimeters of a heavy culture of *Staphylococcus aureus* emulsified in sterile physiologic solution of sodium chloride was added to 30 cc of gelatin acriflavine After inoculation the flask was incubated for twelve hours No growth was obtained on subsequent subculture showing that the gelatin acriflavine mixture was not only inhibitory but lethal to a virulent pyogenic organism recently isolated from the tissues By

the incubation at body heat and at lower temperature it was found that the gelatin remained quite liquid and was easily drawn through a fine needle, and the antiseptic action of the acriflavine was bactericidal on short exposure. Further tests showed that this preparation was bactericidal to tubercle bacilli, the test was as follows. Two specimens of sputum, highly infected with tubercle bacilli (three plus), were pooled, subjected to the action of a strongly alkaline solution of sodium hypochlorite, and carefully washed. One half of the resultant sediment was emulsified in 5 cc of sterile physiologic solution of sodium chloride, from which 1 cc was extracted and injected subcutaneously into a guinea pig (positive control). The remainder of the sediment was emulsified in 5 cc of a 5 per cent gelatin solution in acriflavine (1:2,000) and incubated for twenty-four hours. A guinea pig was then injected also subcutaneously with 1 cc of this emulsion. After seventy-two hours' exposure at body heat, another animal was so treated. The positive control developed a lesion at the site of inoculation, and smears therefrom showed abundant pus cells and a few tubercle bacilli. At necropsy, the spleen showed a generalized tuberculosis. The incubation period was six weeks. The other two guinea pigs showed no lesions after three months and were killed. At necropsy no lesions were found. It was observed therefore, that (1) the use of gelatin does not impair the efficiency of the antiseptic employed and does not provide a nidus for growth; (2) this preparation will be of the utmost value in disinfecting the cavity. Ten patients have been treated with gelatin acriflavine and some of them responded after all other treatments had failed.

Bacillus Calmette Guérin Strain of Tubercle Bacillus

Sasno and Medlar present experimental data that leave no doubt that it is possible to enhance greatly the virulence of BCG if the culture is grown in a suitable environment. To determine the proper environment was not an easy matter, and to get the original culture to grow luxuriantly in the new environment was also difficult. It is essential to have the pH adjusted between 7.2 and 7.4. This has necessitated the titration of Sauton's medium just prior to the addition of the fresh rabbit serum and to the transfer of the culture, for the medium is rather unstable. Fresh unheated rabbit serum seemed to be essential for a rapid increase of virulence. The factors that determine the virulence of pathogenic bacteria are but little understood. This is especially true for the tubercle bacillus. Environment plays an important part, but the factors necessary to produce the proper environment are largely unknown. From their study the authors believe that the pH of the medium is one important factor and that there are substances present in unheated normal serum which greatly assist the tubercle bacillus to regain its pathogenicity. BCG, when grown under such an environment, developed a virulence which was greater than that of any other culture of tubercle bacillus which the authors have had in their laboratory. For more than six months, since the return of virulence they have kept this altered BCG culture on Petroff's egg medium. It is still virulent, but to a lesser degree. Another fact of importance is that with the return of virulence the organism is equally pathogenic for guinea-pigs, calves and rabbits. It would seem that the normal rabbit serum has made available substances which have made the culture equally virulent for various animals. The work substantiates the observations of Petroff and Branch on the 'dissociation' of BCG. They have not used the same method, but their end results are similar. The gross appearance of virulent and of nonvirulent cultures is different. The virulent culture is smooth, veil like, colorless, and easily emulsified. The culture of low virulence is rough, compact often chromogenic and emulsified with difficulty. In their work the authors have purposely taken the original culture without any attempt at dissociation. There can be no question of contamination. It was possible to alter the original BCG culture in its gross appearance and in its virulence without resorting to isolation of single colonies. Since it is possible to bring about such a marked alteration of BCG "in vitro" and since so little is known relative to the factors that enhance or retard the pathogenicity of the tubercle bacillus, it would seem essential to use great caution in any application of BCG as a prophylactic vaccine against tuberculosis. Great care must be used in the selection of the culture medium for cultivation of BCG if it is to be used as a prophylactic

vaccine. The pathogenicity of BCG varies greatly with the environment. While Calmette's observations point, so far, to the innocuousness of the vaccine, still all control over the tubercle bacillus and its actions is gone once it gains access to the tissues. BCG is not a "virus fixe" unless it is kept in a certain environment.

Bulletins et Mem de la Soc des Chirurgiens de Paris

22 645 688 (Nov. 7) 1930

- Hypochlorites in Disinfection of Wounds. M. Ico—p. 650.
Treatment of Open Fractures. M. Petit de la Villeon—p. 661.
*Two Methods of Operation in Inguinal Hernia. R. Bonneru—p. 664.
Intra Articular Avulsion of Fragment of Bone in Knee. R. Massart—p. 666.
Case of Duodenal Stricture. J. Lanos—p. 671.
Cancer of Great Omentum. I. Bonnet—p. 675.
Cyst of Parovarium. P. Muller—p. 678.
Schlatter's Disease. M. Peugniez—p. 680.
Volvulus of Entire Small Intestine on Mesenteric Axis from a Small Adhesion of Great Omentum. V. Pauchet and Le Gac—p. 685.
Complete Isolated Fracture of Head of Radius. J. Lanos—p. 687.

Two Methods of Operation in Inguinal Hernia.—Bonneru discusses two new methods of operative technique for use in cases of inguinal hernia. The first method proposed by Bossy, is as follows. After the hernial sac has been detached but not opened, its free end is grasped with long curved forceps without teeth and is thrust back into the abdomen by invagination. As the forceps are brought upward and outward, their end is pressed against and through the inner surface of the abdominal wall at a point as close as possible to the spina iliaca anterior, until the soft parts are passed. On the projection thus formed a short incision is made so that the extremity of the forceps, with the sac, may be brought through the wall. The sac is then grasped and fixed to the surface of the aponeurosis or even to the skin. The forceps are drawn out. The author does not think favorably of this method, especially of the modified technique to be used in long standing adherent hernias which involves separating the fibrous tissues common with the testis and invaginating the whole into the abdomen. If this were done and an orchitis should develop later the testis would be in an extremely unfavorable position. In fact, the only conditions in which the author considers reduction *en masse* expedient are cases of ptosis of the large intestine, and even then he advocates preliminary opening of the sac to verify its contents. The second method, proposed and used extensively by Lembo, consists essentially in finding separating and using the internal and external cremaster muscles as material for reconstruction of the wall. The author considers this method much more consistent and practicable than the first one.

Bull. et Mem. de la Soc. Med. des Hôpitaux de Paris

(54) 1715 1769 (Dec. 8) 1930

- Diffuse and Protean Ostitis of Knee. Probably of Syphilitic Origin. H. Dufour, Cottenot, Rey and Riou—p. 1716.
Torsion Spasm of Ziehen Oppenheim Type. G. Cullain and P. Molfret—p. 1731.
Disappearance of Periarthritic Calcifications in Case of Bilateral Scapulo-humeral Chronic Periarthritis. K. J. Weissenbach and I. Jansson—p. 1733.
*Primary Generalized Pneumococcal Peritonitis in Adult. Two Cases. H. Darre, L. Friederich and H. Mamou—p. 1738.
Syndrome of Acute Anemia in Course of First Attack of Malaria. P. Melnotte—p. 1744.
Exanthematous Undulant Fever. Vedrenne—p. 1747.
Epilepsy and Cardiopathy. D. Olmer, J. Berthier and J. Olmer—p. 1750.
Scaps in Internal Therapeutics. M. Renaud—p. 1754.
Cold Therapy in Pulmonary Tuberculosis. P. Ameuille and I. Klotz—p. 1759.

Primary Pneumococcal Peritonitis. Two Cases.—Darre et al. report two cases of pneumococcal peritonitis in adults which they consider significant because of the fact that the disease is rarely observed except in children. The two patients presented an almost identical syndrome: brutal onset of diffuse abdominal pain resembling colic, nausea, alimentary then bilious vomiting, profuse bilious and fetid diarrhea, drawn necks, high fever and rapid pulse. The differential diagnosis between pneumococcal and appendicular peritonitis is easy since the presence of diarrhea and the almost complete absence of abdominal contraction are pathognomonic of the pneumococcal form. However, in the two cases reported the usual difficulty was experienced in deciding between pneumococcal peritonitis and alimentary intoxication. In fact in both cases the first diagnosis

made was that of alimentary intoxication, probably partly because of the definite elimination of the ordinary forms of peritonitis and because the pneumococcal form is so seldom encountered in adults. The correct diagnosis was based on the fact that the intensity and rapidity of the alteration in the patient's general condition did not seem consistent with the usual symptoms of alimentary intoxication; the abdomen proved not to be absolutely supple but instead presented a slight resistance in the subumbilical area and the iliac fossa; the porraceous appearance of the vomit; the development of herpes of the lips and an excess of polymorphonuclears in the blood also seemed to indicate peritonitis. In one case surgical intervention was not attempted, and the patient died. The second patient was operated on after five days with excellent results. The authors hesitate to recommend any particular method of treatment since the observation of two cases does not seem sufficient basis for assuming that the method of delayed operation usually prescribed for children, is the treatment of choice for adults.

(51) 1771 1802 (Dec 13) 1930

- *Azotemia in Course of Typhoid With or Without Treatment by Acriflavine Hydrochloride. Brule and Lenegre—p 1772
Azotemia After Injections of Acriflavine Hydrochloride. A. Lemerre—p 1779
Chrysotherapy in Tuberculosis. M. Renaud and Petit-Maire—p 1780
*Pulmonary Tuberculosis in Diabetic Patients. Treatment by Bilateral Collapsotherapy and Insulin. M. Labbe, R. Boulin and Justin Besançon—p 1781
Case of Combined Sclerosis of Spinal Cord with Acute Ataxia in Patient Cured of Pernicious Anemia. P. Lemoine and C. See—p 1786
Acute Nephritis from Ingestion of Corrosive Mercuric Chloride. R. Chosy and E. Perrot—p 1789

Azotemia in Typhoid—Brule and Lenegre report two cases of azotemia in typhoid patients who had received injections of acriflavine hydrochloride. They also report a case in which azotemia was observed in a typhoid patient who had not been given the acriflavine hydrochloride treatment; the azotemia was not accompanied, moreover, by either albuminuria or cylindruria and marked diuresis was present. Since it has been proved experimentally that acriflavine hydrochloride sometimes causes azotemic nephritis, and since azotemia may also be caused by the typhoid itself, diagnosis becomes a delicate problem in cases in which azotemia is observed after injections of the medication and the urea content of the blood has not been determined before the beginning of the treatment. Moreover, the two causes acting simultaneously in the same patient, could have a cumulative effect. The authors do not consider these facts sufficient grounds for discontinuing the use of acriflavine hydrochloride in the treatment of typhoid patients, however, since it has been employed in so many instances with excellent results. They merely advise careful observation of the patient and regular determination of the urea content of the blood, even in the absence of pathognomonic urinary symptoms.

Pulmonary Tuberculosis in Diabetic Patients—Labbe et al report two cases that they have observed for three years and one that they have observed for four years in which tuberculosis developed in the course of diabetes and in which insulin treatment combined with the establishment of a therapeutic pneumothorax has given good results. In the last case the patient was in a condition of diabetic coma at three different times and three times presented acute pulmonary symptoms. Yet with careful attention to diet and regular doses of insulin and with a pneumothorax on the left side and a phrenicectomy on the left, she was able to lead a comparatively normal life at the time of writing. While there can be no hope of an actual cure in such cases, the authors point out the possibility of enabling patients to control their condition by a combined treatment of the diabetes and tuberculosis so that they may live in apparent good health for an indefinite period.

Lyon Chirurgical

27 705 852 (Nov-Dec) 1930

- *Local Anesthesia in Major Operations on Stomach. S. S. Judine—p 705
Osteogenic Disease Terminated by Malignant Evolution of a Chondroma. J. Crevel and R. Peycelon—p 733
Cholecystostomy and Pseudolithiasis of Gallbladder. Alternate Excretion of Bile and Mucus. P. Santy and P. Mallet-Guy—p 750

Local Anesthesia in Major Operations on Stomach—Judine reports a number of long and complicated operations

—resections for peptic ulcers after gastro-enterostomy, sub-total resections for precardiac gastritis ulcers, total and sub-total gastrectomies for cancer and other diseases—in all of which used local anesthesia. He attributes the excellent results to the secured to the method of anesthesia. Patients already dangerously weakened cannot be kept under the influence of a profound general narcosis for two or three hours without having intestinal disturbances that interfere with the completion of the operation. A less profound narcosis does not insure sufficient relaxation of the abdominal wall and thus make difficult to gain access to all parts of the abdominal cavity. An incomplete narcosis, moreover, is dangerous in its effects, for an insufficiently paralyzed nervous system is easily overexcited and may lead to operative shock. The use of local anesthesia, however, makes it possible to avoid these difficulties. There is no general intoxication and a complete relaxation of the abdominal wall is secured. The only wholly effective method of preventing irritation of the central nervous system is by complete blockage of the afferent nerves.

Revue Belge des Sciences Medicales, Louvain

2 749 828 (Nov) 1930

- Roffo's Neutral Red Reaction in Diagnosis of Cancer. J. Bottin—p 765
Rectal Necrosis with Avertin. P. Guns—p 765
Preventive Vaccination of Adult Guinea Pigs with BCG by Ocular Method. P. Nels—p 774

Roffo's Neutral Red Reaction in Diagnosis of Cancer—Bottin first reviews the literature in which numerous authors give the results of experiments to determine the value of Roffo's neutral red reaction in the diagnosis of cancer. The totality of the observations reported showed that among 1,211 cases of cancer a positive reaction was obtained in 70.5 per cent and among 3,807 cases of noncancerous conditions a positive reaction was obtained in 13.4 per cent by the use of the neutral red test. The author's personal experiments include 140 cases of cancer in 89 of which (63.57 per cent) the reaction was positive and in 50 of which (35.71 per cent) it was negative. Among 140 cases of noncancerous conditions, he obtained 45 positive reactions (32.14 per cent) and 89 negative reactions (63.57 per cent). Since the positive reactions in noncancerous conditions included a great variety of diseases, some of them difficult to distinguish from cancer in the early stages, the author feels that Roffo's reaction has little if any practical diagnostic value. He continued his experiments, however, in order to ascertain whether the reaction could throw any light on the disturbances produced in the organism by cancer or on the general disorders that tend to produce cancerization. He found that it is evidently favored by a high carbon dioxide content of the blood, that it seems due to a disequilibrium that is capable of passing through inflamed membranes and that the reaction is found most often and to the greatest degree in markedly cachectic conditions, whether or not the cachexia is connected directly with cancer.

Schweizerische medizinische Wochenschrift, Basel

60 1169 1192 (Dec 13) 1930

- Discussion of Present Day Obstetric Problems. A. Goenner—p 1169
Tuberculosis of Thyroid. A. Dimitz—p 1170
Typhus and Typhus Recurrens in South Russia. I. Winteler—p 1172
Behavior of Dust Particles Under Influence of Ultraviolet Rays. Pfaff—p 1174
*Results of Vaccination in Persons Who Nine Years Previously Had Had a Mild Form of Smallpox and in Patients with Chickenpox. E. Diem—p 1174
Pharmacology of Valerian. E. Beck—p 1180
Percutaneous Resorption of Irradiated Ergosterol. M. Lazarew—p 1182

Vaccination in Persons Who Had Had Mild Smallpox and in Patients with Chickenpox—Among forty-five persons who from eight to nine years previously had had an attack of modified smallpox (varioid), Diem observed not a single entirely successful vaccination. In about 10 per cent of the cases the effect of vaccination was slight and could be estimated at from one fifth to one third of a complete success. These results are surprising, since in other localities vaccinations have been successful after much shorter periods. From the point of view of immunology this epidemic of modified smallpox is more like true smallpox than are other forms of smallpox, especially that form which is designated as alastrim. The author also investigated the effects of vaccination in patients with chickenpox.

Some patients were vaccinated before the exanthem became manifest, others while the eruption was most severe, and a third group during the period when the eruption was disappearing. In all of these cases the vaccination results were positive. In comparing the effects of the vaccination in patients with chickenpox with those in healthy children, differences could not be detected.

Annali Italiani di Chirurgia, Naples

9 1219 1344 (Dec 31) 1930

- *Primary Malignant Tumors of Lung from Clinicotherapeutic Point of View E Gioja—p 1219
- Filling of Bone Cavities with Iodoformized Plaster R Brancati—p 1244
- *Primary Intra Ossal Chronic Abscess (Brodie's Abscess) I Radice—p 1258
- Calcium Content of Bone Fragments at Site of Experimental Fractures C Loreto—p 1283

Primary Malignant Tumors of Lung—Gioja deals with a case that came under his observation and presents a number of views on the diagnosis, prognosis and treatment of primary malignant neoplasms of the lung, calling attention above all to the frequency with which these tumors are confused, from the roentgen point of view, with hydatid cysts of the lung, and to the difficulties that still prevent an early diagnosis. From the surgical point of view the possibilities of radical treatment are found in only a limited number of cases, owing to the difficulties encountered in endeavoring to reach an early diagnosis. Some operators report considerable improvement from the use of local anesthesia. Alessandri, followed by almost all operators of late, establishes a pneumothorax the day before the operation, and finds this refinement in the technic of considerable importance.

Primary Chronic Bone Abscess (Brodie's Abscess)—Radice states that Brodie's abscess is more common than is supposed, being found, according to some statistics, in from 7 to 12 per cent of the cases of osteomyelitis. He describes four cases that came under his observation. On the basis of his observations and the reports in the literature, he endeavors to give a complete clinical picture of this interesting disorder and to establish within precise limits its pathogenic bases.

Archivio Italiano di Chirurgia, Bologna

27 537 639 (Nov.) 1930

- Experimental Researches on Pneumectomy A Vecchi—p 537
- Evolution of Congenital Cova Vara D Bargellini—p 578
- Physiopathology of a Ureter Subjected to Forceps Pressure P Pieracini—p 585
- *Clinical and Experimental Researches on Certain Disturbances Associated with Spinal Anesthesia I Biancalana—p 601
- *Resection of Lumbar Sympathicus Thermometry M Ronzini—p 620
- Strumitis Due to Pneumococcus L Docimo—p 627

Research on Disturbances Associated with Spinal Anesthesia—Biancalana points out that the variability in the physiologic conditions of the spinal fluid, together with the diversity of technic employed in spinal anesthesia complicates research on the pathogenesis of the disturbances resulting from rachianesthesia. The results of clinical and experimental research on the phenomenon of the solution of the substances injected into the spinal canal and on the neurotropism are contrary to the hypothesis of the movement of the anesthetic to the bulbar centers, since spinal anesthesia is applied to the lumbar spaces and none of the maneuvers calculated to favor the diffusion of the anesthetic upward is employed, and since the patient is kept after the puncture, in a horizontal or upright position. The possibility of doses of an anesthetic attaining the superior nerve centers may be realized when the technic employed is different or when the puncture is applied to the thoracic spaces. The Trendelenburg position applied for a moment after rachianesthesia is useful in all disturbances possibly due to bulbar anemia.

Resection of Lumbar Sympathicus Thermometry—Ronzini, following researches reported in a previous article from which it became evident that lumbar sympathectomy does not induce immediate vasoparalysis in the adjoining femoral artery, in this article studies the effects immediate and remote of lumbar sympathectomy on the temperature of the lower limb. He experimented on the dog using a sensitive thermo-electric needle, which was implanted in the muscles of the hip. In some

of the individuals there developed transitory hyperemia and hyperthermia but in most of the dogs positive thermometric reactions were lacking. The possibility of correcting the trophism of a limb affected by disturbances of angiospastic origin thus remains doubtful. But since the good results secured by other authors by such operations on man in angiospastic diseases of the extremities cannot be categorically denied on the basis of researches on animals, the author concludes that in order to explain the diversity of results in the two fields—the clinical and the experimental—it may be postulated that the lumbosacral sympathicus, assuming in pathologic conditions a state of tonic hyperexcitation, acts under the influence of an essential pathogenic factor of the angiospastic disease.

Clinica Medica Italiana, Milan

61 545 660 (Nov-Dec) 1930

- Neoplasms of Duodenal Papilla G Colella—p 545
- *Congenital Atresia of Orifice of Pulmonary Artery with Closed Interventricular Septum and Persistent Botallo's Duct in Man Aged Twenty A Costa—p 567
- Energy Exchange and Glycoregulation G Lami—p 575
- *Etiopathogenic Researches on Pleuritis Due to Therapeutic Pneumothorax R Scalabrino—p 598
- Atypical Ventricular Forms in Cardiac Insufficiency and Angina Pectoris R Capo and G Bagnaresi—p 627

Congenital Atresia of Orifice of Pulmonary Artery—Costa describes a rare case of atresia of the orifice of the pulmonary artery in a man, aged 20. It is exceptional that life, under such conditions, was prolonged beyond childhood. In addition to the persistence of Botallo's duct, a peculiar malformation was associated with the atresia of the artery which the author refers to the superior septum, namely a cribrate condition of the anterior circumference of the foramen ovale. The author also presents a rare type of tendon cord in a child extending between Botallo's foramen and the mitral valve. This observation, which some connect with the superior septum, is referred by the author to the intermediate septum. In the case of atresia of the orifice of the pulmonary artery, the compensation was effected in great measure by the patency of the foramen ovale and the persistence of Botallo's duct. The patient presented an intense cyanosis and osteopathy of the fingers and toes. There was no focus of pulmonary tuberculosis.

Etiopathogenic Researches on Pleuritis Due to Therapeutic Pneumothorax—Scalabrino gives the results of his histologic researches on the pleura not only in persons in whom necroscopy showed no intrathoracic tuberculous lesions demonstrable microscopically, but also in tuberculous persons subjected to collapse therapy of the lung. On the basis of the results secured, he considers that, in the majority of subjects without tuberculous lesions microscopically visible there are found, at the microscopic examination in the parietal and the visceral pleura especially at the site of scars due to thickening remnants of a tuberculous process probably due to an invasion from a primary focus. On the basis of these data he assumes that there occurred during the pneumothorax treatment a reactivation of these foci that had long been dormant. The clinical manifestations of this reactivation may be profoundly different in different cases, in relation chiefly to the histologic type that the inflammation in the pleura may assume (ranging from simple hyperemia to the exudative vascular type), and only secondarily in relation to the general and local allergic factors.

Clinica Pediatrica, Modena

12 1019 1112 (Dec.) 1930 Partial Index

- *Etiology of Aphthous Stomatitis V Zamorani—p 1095

Etiology of Aphthous Stomatitis—Experimental researches lead Zamorani to believe that aphthous stomatitis in children is caused by the virus of herpes simplex. In the mouths of six children with aphthous stomatitis, well differentiated from herpetic stomatitis the author demonstrated the presence of a virus which when inoculated into the conjunctival sac of the eyes of rabbits (through the scarified corner) caused a typical experimental herpetic keratoconjunctivitis which confers immunity to the eye both against a virus of the same nature as that which was inoculated and to the virus of herpes simplex. One rabbit developed encephalitis after the experimental lesion of

the eye. Serial direct inoculation from eyes affected with experimental keratoconjunctivitis of stomatitic origin to normal eyes of other rabbits caused the transmission of the disease, which presented an intense nature even after the sixth transfer. Bacteria cultivated from eyes of rabbits with the experimental disease are not pathogenic to the eyes of normal rabbits. The inoculation made with filtrates of tissues affected with the disease failed to cause the experimental disease, though it conferred an attenuation of the normal receptivity of the tissues to the infection. The author says that the especial features that herpetic diseases show in children are probably due to the fact that in childhood the mucosae are more receptive than the skin to the herpetic virus.

Giornale di Clinica Medica, Parma

11 1185 1280 (Dec. 10) 1930

- Thyroid and Lipoid Nephrosis. V. Pennati—p. 1185
 *Orthodiagraphic Records of Heart and Aorta in Case of Addison's Disease. A. Tattomi—p. 1199
 *Acute Hemocytoblastic Syndrome. A. Esposito—p. 1205
 Treatment of Menstrual Disorders. A. Schweitzer—p. 1210

Heart and Aorta in Case of Addison's Disease—Tattomi describes the orthodiagraphic records of the heart and the aorta in a case of Addison's disease and reaches the conclusion that in this disease those organs in direct relation to the pressure disequilibria undergo volumetric changes comparable to manifestations of a state of hypotonia, which invades these organs under the action of the epinephrine deficit due to suprarenal insufficiency. The aortic hypotonia reveals itself by a more or less marked dilatation of the vessel caliber, the myocardic hypotonia manifests itself by a weakening of the whole organ but especially of the left ventricle.

Acute Hemocytoblastic Syndrome—Esposito describes a new case of acute hemocytoblastic syndrome developing in a boy, aged 9, previously well, with fatal evolution in fifteen days. He gives a brief account of the clinical manifestations and the hematologic observations.

Pediatria, Naples

38 1201 1256 (Nov. 15) 1930

- *Symptomatology of Echinococcosis of Liver in Children. G. Vitetti—p. 1201
 Ionic Dissociation and Protein Content of Blood Serum of Infants with Nutritional Disturbances. B. Vasile—p. 1217
 *Malignant Abdominal Sarcoma with Rare Localization in Child. G. Bovenzi—p. 1227

Symptomatology of Echinococcosis of Liver in Children—Among a group of fifty-eight children, aged from 1 to 12 years, with echinococcosis of various organs, observed by Vitetti, the infection was localized in the liver in thirty-four. The condition is more frequent in children of about 12 years and it is never observed in children aged less than 3 years. The most frequent localization of hydatid cyst in the liver in children is the right lobe (eleven out of thirty-four cases), coming next in importance is that of the left and central lobes of the liver (with nine and five cases, respectively, out of thirty-four). The liver reacts against the hydatid process by increasing its size and consistency. This phenomenon of hyperplasia is more marked in children than in adults. The evolution of hydatid cyst is protracted, from one to four years in the author's cases after the discovery of the cyst, as a rule, hydatid cysts of the liver in children develop in a silent form until accidentally discovered. Owing to the fact that children are more exposed than adults to trauma, the rupture of hydatid cyst into the peritoneal cavity is more frequent in the former than in the latter. The author makes reference to the diagnostic value of several tests. The exploratory puncture that should represent the best diagnostic resource is dangerous. Though performed with the best asepsis, it may give origin to anaphylactic hemorrhagic or even suppurative phenomena. As to treatment, surgery is the only reliable method; the earlier the operation is performed the better are the results.

Malignant Abdominal Sarcoma with Rare Localization in Child—Bovenzi reports the case of an unusual form of malignant abdominal tumor diagnosed clinically as abdominal sarcoma with peritoneal localization in a child aged 6 years. The condition, which at first did not seem serious, became

aggravated by the rapid and sudden development of the tumor. A laparotomy revealed the presence of an inoperable malignant sarcoma of large size, occupying the entire abdominal cavity. It originated in the vicinity of the spinal column, to which it was united by a large pedicle which crossed the abdomen in its entire anteroposterior diameter.

Riforma Medica, Naples

16 1737 1776 (Nov. 3) 1930

- Osmotic Resistance of Erythrocytes Secured by Splenopuncture in Morbid Processes Associated with Splenomegaly. A. Fieschi—p. 1739
 *Meinicke Clarification Test in Relation to Wassermann Test. E. Sosca—p. 1741
 Two Rare Cases of Prolonged and Recurring Osteomyelitis. U. Fogliani—p. 1744

Meinicke Clarification Test in Relation to Wassermann Test—Sosca recalls that the Meinicke clarification test is a modification of the Meinicke flocculation test. The positive reaction consists in the clarification that is produced in the serum mixture when brought into contact with the dilute antigen. In the negative case, the serum mixture remains turbid. From the results secured in the testing of 200 serums, the author concludes that the Meinicke clarification test is plainly more sensitive than the Wassermann test and constitutes an excellent control and valuable aid to the Wassermann test. It may be used therefore, in combination with the Wassermann test or alone. Since it possesses a definite specific power and a high degree of sensitiveness it is a reliable test when used alone.

46 1777 1816 (Nov. 10) 1930

- Acute Anterior Poliomyelitis. Early Diagnosis and Causal Treatment. C. B. Albrici—p. 1779
 Multinodal Pendular Modification of Patellar Reflex. L. Benedek and J. von Thurzo—p. 1785
 *Point of Technic in Retrogasserian Neurotomy. D. Vallone—p. 1790

Point of Technic in Retrogasserian Neurotomy—Vallone recalls that, in the first case of retrogasserian neurotomy that he observed, he became convinced that the hemorrhage that occurs as a result of the blocking of the middle meningeal artery is a drawback in the completion of the operation, adding greatly to the difficulties, and that tamponing of the foramen rotundum whether it is done with cotton or with pieces of wood or bone does not suffice to arrest effectively the hemorrhage. It seemed therefore clear that there was need of ligating the artery, and through experimentation on cadavers he found that in order to ligate the artery readily in all cases it was necessary to have on hand a number of suture carriers of different curvature and sizes, since the position of the foramen rotundum varies in its relation to the emmentia arcuata. He prepared such needles in advance and in three operations, one performed by Professor Vaghani and two by himself it was possible to ligate the middle meningeal artery at two points and thus to reach Meckel's cavity with rapidity and safety.

Semana Médica, Buenos Aires

37 1457 1536 (Nov. 13) 1930 Partial Index

- Rheumatic Alterations of Auriculoventricular Conduction. T. Padil and P. Cossio Jr.—p. 1469
 Physiologic Displacement of Heart. G. Bosco—p. 1475
 *Sugar Metabolism in Obesity. Predisposition of Obese to Develop Diabetes. P. B. Landabure—p. 1479
 Robertson Laval's Operation in Coxalgia. E. A. Votta—p. 1487
 Simultaneous Roentgen Examination of Cystbladder and Urinary Tract. B. Varela Fuentes and P. Rubino—p. 1530

Sugar Metabolism in Obesity—Landabure made determinations of the sugar metabolism in a group of sixty-four obese persons who did not have glycosuria. The blood sugar was determined both at fasting and after the administration of dextrose. During fasting, thirty persons had a normal sugar content of the blood (from 0.7 to 1 Gm. of sugar per thousand cubic centimeters of blood), nineteen persons had a transitional glycemia (with figures ranging between 1 and 1.3 Gm. per thousand cubic centimeters of blood) and fifteen persons had a manifest hyperglycemia (with figures above 1.3 Gm. per thousand cubic centimeters of blood). After the administration of dextrose in the first subgroup (thirty patients with normal content of sugar in the blood at fasting) the results of the test were negative in eight, strongly positive in ten, slightly positive in eight and doubtful in four. In the second subgroup (nineteen persons

with transitional hyperglycemia) the results were positive in twelve, negative in six and in one person the test was not made. In the third subgroup (fifteen persons with manifest hyperglycemia) the results of the test were positive in nine, negative in two and in the remainder either the test was not made or the results were doubtful. The results indicate that 60 per cent of obese persons who have either transitional forms of glycemia or manifest hyperglycemia react in a positive manner to the test of provoked hyperglycemia. The author considers that there is a relationship between obesity and diabetes which is proved by the predisposition that obese persons have to develop diabetes. Hence the advisability of making the determinations of the mechanism of the sugar regulation in obese persons. When the test of provoked hyperglycemia does not yield positive results in strongly suspected cases of disturbed sugar metabolism, the same test should be repeated after the function of the pancreas has been exhausted.

37 1693 1772 (Dec 4) 1930

History and Importance of Discovery of *Spirochaeta Pallida* D. Speroni —p 1693

Complications of Appendectomy C. I. Allende —p 1697

Syndrome of Uremia and Chloropenia with Meningeal Symptoms J. M. Macera I. Feigues and J. Pereyra Kräfer —p 1718

Smallpox Vaccination in Treatment of Whooping Cough G. A. Schiavone —p 1723

Osteogenesis of Periosteal Origin O. Ivan ssevich and R. C. Ferrari —p 1730

Quantitative Determination of Urea in Blood Method of Folin Wu N. E. Insua —p 1736

Fibromyoma of Meninges Causing Paralysis of Legs and Disturbances of Gallbladder O. Copello and D. Brachetto Brian —p 1740

Smallpox Vaccination in Treatment of Whooping Cough—Schiavone vaccinated ninety four children not previously vaccinated who had whooping cough. The age of the children ranged from 3 months to 9 years, though the largest number were from 7 months to 4 years. In a large number of previously nonvaccinated children with whooping cough vaccination caused a favorable evolution of the disease. As soon as vaccination takes effect, the attacks of cough diminish both in number and in intensity and in most of the cases vomiting stops. In cases in which the intensity of paroxysmal attacks is not as yet established in a determined form, vaccination prevents them while in those cases in which the paroxysmal attacks are already established in all their characteristic intensity the influence of vaccination causes their discontinuation. Vaccination is advisable as treatment of whooping cough in nonvaccinated children in good general condition. In these children, vaccination does not cause disturbances nor complications. However, the examination of children should precede vaccination in order to exclude from the treatment those children with poor nutritional conditions and those who exhibit marked weakness or tuberculosis. The influence that revaccination may have on whooping cough has not been as yet determined, because no revaccination has been made heretofore in relation to these observations. It seems advisable to make further studies on the influence of revaccination on the condition in order to find out whether the good results obtained from vaccination could be obtained also from revaccination. The mechanism by which vaccination acts on whooping cough is still unknown. It would be explained however, by the conception that it is caused by the formation of a small fixation abscess at the level of the pustule. Seventy four cases are briefly discussed.

37 1773 1852 (Dec 11) 1930 Partial Index

*Dolichocolon A. Dagnino —p 1780

Investigations of Cerebrospinal Fluid of the New Born for Anthromia C. M. Pintos —p 1815

*Bad Results of Radium Applications in Treatment of Ozena R. Podesta and M. Arani —p 1820

Symptomatology of Diabetes in Children T. Puchulu —p 1822

Cavernous Angioma of Orbit Functional Recovery After Operation A. Crocco —p 1826

Symptoms of Hypoglycemic Syndrome of Diabetes in Children P. B. Landabure —p 1830

Syndrome of Total Division of Ulnar and Median Nerves and Partial Division of Musculocutaneous and Internal Brachial Cutaneous Nerves

Caused by Gunshot Wound B. B. Spota and A. E. De pratin —p 1833

Evolution Psychosis of a Paranoid Type as Complication of Measles A. Barranco —p 1836

Fracture of Anterior Wall of Right Frontal Sinus Caused by Trauma E. de Cerqueira Falcão —p 1846

Dolichocolon—Dagnino's paper is divided into seven chapters. The first chapter deals with the normal colon from the anatomic and physiologic points of view, and factors related with the embryonic development of the colon and neighboring organs, the development and functioning of the colon in several periods of extra uterine life and adult age and the vascular and nervous systems of the colon are discussed in detail. In the second chapter the etiology, pathology and symptomatology of dolichocolon are discussed. The author says that dolichocolon has characteristic symptoms which make of it a clinical entity. In the third chapter (which deals with the anatomic and clinical forms that dolichocolon presents), the author considers that there are as many anatomic forms of dolichocolon as there are segments in the colon. The type of the abnormality is influenced by the segment involved since the condition may be total or partial and one or several of the segments of the colon may be affected. The condition presents several clinical forms the most common of which are those of a painful type sometimes associated with pneumatosis. In a discussion of the frequency of dolichocolon, the author states that he found 50 cases out of a total number of 1000 patients with diseases of the digestive tract. The condition is more frequent in women than in men. In the author's cases the segments most frequently affected were in order of frequency the sigmoid colon, transverse colon, ascending colon cecum and descending colon. The condition of total dolichocolon is rare. In the fourth chapter are discussed the clinical and roentgen diagnoses. For roentgen examination of the colon the author advises the oral administration of the opaque substance. He objects to the use of the opaque enema. Though it saves time to the roentgenologist, it causes exaggerations of the abnormality, giving results that are not exact. The roentgen examination after the ingestion of the opaque substance permits a correct estimation of the condition on the basis of the descent of the substance. The fifth and sixth chapters include points related to the prognosis and treatment of dolichocolon. Especial emphasis is laid on the orthopedic and physical therapy. Some advice is given on diet. The seventh chapter includes the case reports of seven cases discussed in detail and illustrated with roentgenograms of several types of dolichocolon.

Results of Radium Applications in Treatment of Ozena—Podesta and Arani consider radium therapy in ozena dangerous. The dose is not as yet definite and the application of a dose of radium larger than that which the tissues can tolerate may cause permanent deformities. Because of the atrophy caused by ozena in the tissues, the septum has been rendered thin. Besides that the nasal cartilages are highly sensitive to the action of radium. If radium therapy is given to patients with ozena, the septal cartilage should be protected with proper filters. The same dose that may be only stimulative and beneficial to some of the tissues may cause extensive necrosis and large perforations in the septum either as immediate or as late results. The authors report the case of a woman aged 22 with ozena of neither syphilitic nor tuberculous origin. While receiving the treatment the patient developed regional symptoms which compelled discontinuation of the treatment after she had received a total number of six applications of radium of seven hours each once a week. The bad odor of the nose disappeared in this case though the crusts persisted. The examination of the patient showed besides a condition of atrophic rhinitis of an ozenous origin the presence of a large perforation of the septum which did not exist before the applications of radium and which proved to be caused by radium therapy. Though the literature contains few case reports of this kind the authors were able to find similar bad results reported from radium therapy in ozena such as the creation of permanent fistulas in the nose or large perforations in the hard palate. They consider it advisable to publish reports of patients who received treatment a long time ago in order to set the right value on the results of the treatment.

Fracture of Anterior Wall of Right Frontal Sinus—De Cerqueira Falcão's patient was accidentally injured by the elbow of a laborer while the latter was carrying a heavy load on his head and holding it with his hands. The blow made the patient fall down and when he got up he felt dizzy. Half an hour after the accident the patient began spitting blood and palpebral edema appeared. On palpation a hot spot was felt on

the supraciliary region where the blow had been received and slight crepitation was heard. Roentgen examination showed the presence of a fracture of the anterior wall of the right frontal sinus. Four days after the trauma had been received and when the patient had been given only a slight disinfectant and medical treatment the edema disappeared and the patient abandoned all treatment. The author says that the fractures of the anterior wall of the frontal sinus are rare and depend on several factors such as the size of the sinus, the thinness of the anterior wall and the shape of the forehead factors which could be noted in the roentgenograms of the author's patient. The blow with the elbow of another person had not been previously reported as a cause of these fractures.

Archiv fur Schiffs- und Tropen-Hygiene, etc., Leipzig

34 625 (74 (Dec.) 1930)

*Blackwater Fever Treatment. P. Ujlaki—p. 625.
Malaria Antiparasitic Properties of Blood Serum. A. Radosavljevic—p. 629.

*Protozoal Disease of Intestine in Children. R. Odriolsola—p. 643.
*Leprosy Biochemical Characteristics. A. S. Rajewski—p. 651.
Poisoning with Cobra Venom. Anatomicopathologic Changes in Central Nervous System. F. P. Ostscharenko—p. 657.
Surra Treatment. O. Nieschulz and F. K. Wawo Roentoe—p. 662.

Blackwater Fever Treatment.—Ujlaki believes that the hemolysis in blackwater fever is produced chiefly by the action of products of liver metabolism that have a hemolytic action on the constitutionally inferior erythrocytes. Therefore in the treatment of this condition his main object is to prevent the development of the hemolytic products of liver metabolism. He gives large doses of dextrose by mouth and in drop enemas and supports the functioning of the liver by injections of insulin. During the first three or four days the diet consists exclusively of carbohydrates in the form of bananas and sweetened fruit juices. In order to stimulate diuresis the patients are given large quantities of fluids. Even at night they receive a drop enema consisting of a 5 per cent dextrose solution containing 1 per cent of sodium bicarbonate and 40 or 50 drops of solution of epinephrine hydrochloride per liter. As a beverage they receive sweet lemonade to increase the alkalinity of the blood and thereby counteract the hemolysis. Diuretics are never used. With this form of treatment, jaundice appears only rarely and when it does it is minimal. In five cases a striking cessation of the hemoglobinemia was noted following three or four subcutaneous injections of 1 cc of autoserum. Quinine is given only in the cases in which malarial parasites are present in the blood. Even in large doses it does not produce deleterious effects if its administration is not begun until the fourth day of the supportive treatment of the liver.

Protozoal Disease of Intestine in Children.—Odriolsola states that protozoal infection of the intestine of children causes a chronic toxemia accompanied by protean symptoms. The symptoms may be divided into various groups which represent clinical forms. It is the belief of the author that protozoal infection of the intestine may be the direct or indirect etiologic factor in many intestinal disorders in children that are now considered to be the result of a faulty diet.

Leprosy Biochemical Characteristics.—Rajewski studied the biochemical characteristics of leprosy in three persons with mixed leprosy, three with nodular leprosy, two with macular leprosy and three in the exacerbation stage of leprosy (leproid erysipeloid and exacerbations with fever and nodule formation). It was found that in leprosy the carbohydrate metabolism is diminished. In this disturbance an important part is played by a dysfunctioning of the liver. Determinations of the sugar content of the blood following the intravenous injection of dextrose revealed a disturbance in the carbohydrate metabolism in all forms of leprosy.

Deutsche medizinische Wochenschrift, Berlin

56 2119-2162 (Dec. 12) 1930

Immunity Processes Their Anatomic Foundations and Their Significance for Tuberculosis in Man. W. Pagel—p. 2119.
Care of Scarlet Fever Convalescents to Prevent Contagion. O. Bauer and J. Minkewitsch—p. 2123.
*Rational Calcium Therapy During Childhood. L. Langstein—p. 2127.
Psychology of Accident Neuroses. M. Eyrich—p. 2129.
*Treatment of Malignant Tumors with Radioactive Bismuth (Radium E). H. Kahn—p. 2131.

Rational Calcium Therapy During Childhood.—Langstein points out that calcium preparations are used with good results in many disturbances during childhood, in tuberculous processes, in nervous disturbances in rickets and in allergic diseases. However, calcium therapy has the disadvantage that the effective preparations have an unpleasant taste. In calcium malonate the author discovered a preparation which has the advantage of being tasteless. In order to determine the therapeutic value of calcium malonate, its influence on the calcium content of the blood was investigated, because only those calcium preparations have a therapeutic value which effect an increase in the calcium content of the blood. The tests revealed that calcium malonate increases the calcium content of the blood considerably and because it has not an offensive taste it can be administered in large quantities. The author's experiences with calcium malonate extend over a period of six years. The preparation proved helpful in spasmodic diathesis, in the treatment of children with tuberculosis, in nervous disorders in older children in allergic disturbances and especially in tetany. In developmental disturbances of unknown etiology, calcium malonate may be added to the food. Frequently this proves helpful. In regard to the dosage it is stated that, in clonic manifestations in infants aged 1 year, from 5 to 8 Gm should be given daily. In older children, from 10 to 15 Gm is the daily dose. The preparation can be mixed with the food. In the treatment of tuberculosis, in chronic, nervous disorders or in developmental disturbances a daily dose of from 3 to 5 Gm is sufficient.

Treatment of Malignant Tumors with Radioactive Bismuth (Radium E).—Kahn states that chemical analysis of tumors and organs which had been treated with heavy metal revealed that bismuth is the only heavy metal that deposits selectively in the tumor cells. Because of this the therapeutic doses of most heavy metals are almost toxic doses whereas in the case of bismuth therapeutic effects can be obtained with doses that do not cause toxic effects. In animal experiment as well as in human beings, injections of bismuth influence the growth of tumors. However the results were only temporary, even when the injections were combined with irradiations. Experiments which the author performed in collaboration with Meizer were based on the theory that, instead of effecting a secondary radiation in the cells by irradiation from the outside it would perhaps be more effective to substitute for the irradiation from the outside a radiation within the tumor cells. It was found that the bismuth isotope radium E is the only radioactive substance which, in parenteral administration, influences the tumor cells without injuring other cells. Experiments on animals revealed a selective deposition of the bismuth preparations containing radium E, in the tumor cells. They contained eighteen times as much as other cells. The radioactive bismuth is eliminated mainly by the kidneys. Only small quantities are eliminated by way of the liver and the intestine. In these eliminating organs the bismuth is therefore often temporarily increased. However, the bismuth isotope radium E has not, like other radioactive substances, as for instance the thorium isotopes, an affinity for the reticulo endothelial system and the spleen. In the cancer patients in whom the bismuth radium E was employed the general condition improved considerably and marked changes in the tumor could be noted after several injections. However, because the technique still needs to be perfected and because of the short time of observation conclusive statements in regard to the therapeutic value of this method cannot be made as yet. The author recommends the further investigation of the method.

56 2163-2204 (Dec. 19) 1930

*Chronic Tonsillitis and Its Sequelae. O. Bruns—p. 2163.
*Mice as Indicators of Presence of Carcinogenic Noxae in Factories or in Dwellings. O. Teutschlaender—p. 2166.
Principles and Method of Insulin Therapy of Diabetes in Clinic and in Ambulatory Practice. K. Holm—p. 2167.
Treatment of Circulatory Weakness in Septic Peritonitis by Means of Injection of Epinephrine. A. Faber—p. 2174.

Chronic Tonsillitis and Its Sequelae.—Bruns asserts that it is not always simple for the internist to determine the role of chronic tonsillitis in the pathogenesis and in the course of internal diseases. The majority of internists agree that rheu-

matic diseases such as rheumatic polyarthritis, chorea, infectious heart diseases and also nephritis and the so called infectious forms of arthritis may be considered as sequelae of tonsillar foci. The author further discusses the clinical signs of chronic tonsillitis and its relation to disturbances of internal organs. He comes to the conclusion that the serious, life endangering diseases are rarely sequelae of chronic tonsillitis. However, the chronic, inflammatory foci in the tonsils frequently cause a predisposition to diseases. In regard to the indications for tonsillectomy most internists agree, in that they do not advocate the removal of the tonsils merely on the diagnosis of chronic tonsillitis. They think that tonsillectomy should be done only following a careful examination and in those cases in which a relation to secondary disorders can be proved. Tonsillectomy is always advisable in those patients in whom the diseased tonsils cause frequent relapses. Like most internists, the author thinks that tonsillectomy should not be done during an acute attack, but that from four to six weeks should elapse after an attack before it is done. An early operation is advisable only when the sequelae in internal organs are constantly renewed from the tonsillar focus, or when there is danger of sepsis. It should not be overlooked that early operations may lead to serious exacerbations of arthritis, scurica, nephritis or other disorders. Tonsillectomy, when performed after the acute manifestations of the disease have disappeared, as for instance in relapsing tonsillitis, in acute articular rheumatism and after a nephritis, has only prophylactic value. In chronic nephritis, tonsillectomy is not advisable. Occasionally severe complications such as pneumonia or sepsis develop after removal of the tonsils, and even fatalities have been observed. This is another reason why indications and time for tonsillectomy should be carefully considered.

Mice as Indicators of Presence of Carcinogenic Noxae

Teutschlaender states that a mouse that had been caught in a briquet factory had numerous tumors and warts. Microscopic examination of the tumors revealed that they were squamous cell epitheliomas, and the warts were found to be precancerous formations. The growths were like the tar or pitch cancers that are produced experimentally by the application of tar to the skin of mice. That the growths had been caused by pitch dust is proved by their morphologic identity with the pitch warts and pitch cancers in some of the workers of the factory as well as by the presence of pitch dust in the fur of the animal and by blackish pigment in the Kupffer cells in the liver. The spontaneous pitch cancer in the mouse indicated the presence of carcinogenic noxae in the factory. The author thinks that since a mouse develops cancer after being exposed only for several months, while in human beings cancer develops only after several years of exposure, it would be advisable to keep white mice as controls in factories in which gas or dust is present, the pathogenicity of which cannot be absolutely denied. The careful examination of the mice after a certain time of exposure would reveal whether noxae are present or not or whether the protective measures are effective. In so-called cancer houses, that is, in dwellings which rightly or wrongly are reputed to cause cancer in those who live in them, cages with mice should likewise be kept. In this manner not only could the etiology of cancer be investigated but it would also be possible to take prophylactic measures. The author comes to the conclusion that, since it is possible to prove the existence of cancerous noxae in a factory before a human being develops cancer simply by keeping control mice, it is no longer pardonable to omit this experiment and wait until the workers develop cancer.

Medizinische Klinik, Berlin

26 1845 1880 (Dec 12) 1930

- Diagnosis of Pregnancy. H. Sellheim—p 1845
Active Immunization Against Diphtheria: Testing and Evaluation of Vaccines. W. Kolle—p 1848
Cen Heredity Theory of Hybridogenic Cenasthenia and of Addition of Chromosomes. A. Tschermak—p 1851
Differential Diagnosis Between Myeloid Leukemia and Cancerous Metastases. F. Erdstein and R. Kienbock—p 1853
Combination Anesthesia with Tribromethanol and Nitrous Oxide-Oxygen. H. Florcken—p 1854
Blood Picture and Composition of Blood in Hepatic Icterus. I. Kirten and E. Papenkort—p 1855

- Hemoptysis in Mitral Insufficiency and in Mitral Stenosis. Vieten—p 1857
Torsion of Fecicle of Appendix Epiploica. W. Stutte—p 1858
Treatment of Scleroderma with Pancreatic Ferments. J. Sella—p 1859
Heart Action During Balneotherapy in Patients with Rheumatism. S. Lowy—p 1860
Clinical Significance of Theoretically Normal Specific Gravity of Urine. O. Weltmann and K. Tschilow—p 1861

Differential Diagnosis Between Myeloid Leukemia and Cancerous Metastases—Erdstein and Kienbock report the case of a woman aged 51. Before she came under their observation she had been examined by several physicians. On the basis of the symptoms her ailment had been diagnosed as pernicious anemia and following a blood count leukemia was thought of. The roentgen examination finally revealed cancerous metastases in the lymph nodes and in the lungs. The authors point out that the differential diagnosis between myeloid leukemia and cancer metastases is sometimes difficult, because some cancers cause an irritation of the bone marrow and thus lead to leukocytosis. Roentgenoscopy of the thoracic organs is often helpful in detecting metastases. However, neither the blood picture nor roentgenoscopy is helpful in determining the hidden primary tumor.

Mitteilungen a d Grenzgeb d Med u Chir, Jena

42 143 262 (Dec 18) 1930

- Vermiform Appendix Pathology of Motor Apparatus. R. Rossle—p 143
*Infantile Hereditary Thrombasthenia. A. Fomio—p 166
*Changes in Vertebrae in Carcinosis. A. Scholtz—p 178
*Staphylococcal Sepsis. Clinical Aspect and Treatment. W. Felsenthal—p 185

Infantile Hereditary Thrombasthenia Blood Status and Coagulation—Fomio reports a case of infantile hereditary thrombasthenia (Glanzmann) in a child aged 4 years. The number of blood plates was increased from 250,000 to 700,000, the bleeding time was prolonged and the retractility of the blood clot was decreased. The disturbance of coagulation lay in the third phase and was caused by an insufficiency of the individual blood plate. The first and second phases of coagulation proceeded in the normal manner. The thrombocytosis represented an attempt on the part of the bone marrow to compensate for the insufficiency of the blood plates. The insufficiency was apparent in dry smear preparations. The blood plates were distributed regularly over the field of vision as in a magnesium sulphate preparation. The complete absence of clumping indicated athrombosis. The blood plates were round or oval and sharply outlined forms, drop forms and projections, which are considered manifestations of the tendency to clumping, were extremely rare. They were also larger than normal giant forms were present in many variations. The number and arrangement of the granules were variable but in most of them the number was decreased. Many of the blood plates contained vacuoles.

Changes in Vertebrae in Carcinosis—On the basis of his observations in seventeen cases of carcinosis of the vertebrae, Scholtz concludes that in the differentiation of this condition from other pathologic processes with similar manifestations the examination of the intervertebral disks does not always give conclusive results. Carcinosis of the vertebrae is rarely accompanied by a gibbus. In one of the cases a gibbus was produced not by a posterior displacement of the spine of the vertebra but by the tumor. In carcinosis there frequently occurs a uniform compression of the bodies of the vertebrae. The upper and lower cortical plates of the bodies of the vertebrae possess in some of the cases a resistance to the process of destruction. The axis of the vertebral column undergoes a deformation when as the result of the destruction of the upper and lower cortical plates the relation between them and the intervertebral disks which preserves the axis of the spinal column is disturbed.

Staphylococcal Sepsis. Clinical Aspect and Treatment—In sixty-two cases of staphylococcal sepsis studied by Felsenthal the condition was caused by *Staphylococcus pyogenes aureus* fifty-one times and by *Staphylococcus pyogenes albus* eleven times. Fourteen of the patients recovered. The portal of entry of the causal organism was demonstrated in 56 per cent of the cases. In 72.58 per cent of the patients it was in the form of an injury of the skin, furuncle or paronychia.

in 20.97 per cent it was located on a mucous membrane (endometrium, oral mucosa, nasal mucosa, urinary tract, tonsils) and in 6.45 per cent it could not be found. The location of the focus of sepsis was only slightly dependent on the portal of entry. The points of predilection for the localization of the causal organisms were the bone marrow (29 per cent) and the endocardium (19.4 per cent). Previous healed pathologic conditions of the endocardium and the valves of the heart did not predispose to a subsequent localization of the bacteria on them. In some of the cases the focus of infection was an abscess in the lung. In 17.7 per cent of these cases there was present endophlebitis of the branches of the pulmonary veins and secondary foci of infection. One of the characteristics of the streptococcus is its great tendency to produce metastases; these were present in fifty-eight of the patients. The organ most frequently involved was the kidney, but the elimination of the organism through the bile and sputum resulted also in metastatic involvement of the liver and lungs. The severity of the condition was dependent on the location of the primary focus and the location and number of metastases. In the treatment of the condition, a silver preparation was used in sixteen cases with two recoveries and morphine in twenty cases with two recoveries. Protein therapy proved ineffective in four cases and autovaccines in five cases. Surgical treatment was used in twenty-seven cases with nine recoveries. The results were particularly good following the surgical treatment of foci of infection in the extremities and following drainage in pleural empyema.

Monatsschrift für Kinderheilkunde, Leipzig

48 481-576 (Dec.) 1930

- *Action of Hypertonic Solutions of Sugar in Toxicosis. K. Choremis —p. 481
- Problems in Pediatrics. C. Coerper —p. 485
- *Blood Picture in Initial Fever in Tuberculosis. I. Arany —p. 492
- *Concurrence of Different Forms of Tuberculosis in Twins. C. Stramm —p. 497
- Action of Galactose on Increase in Weight of Nurslings. G. Bischoff —p. 500
- *Simple Formula for Calculating Normal Body Weight of Children. W. Herrmann —p. 506
- Influence of Milk Containing Iodine in Tuberculosis. L. Forst and S. Lory —p. 509
- Hepatic Infantile Case. F. Thoenes —p. 515
- Anorexia in Children. L. Moll —p. 525

Action of Hypertonic Solutions of Sugar in Toxicosis

—In the treatment of a large number of infants with toxicosis, Choremis compared the effects of subcutaneous injections of hypertonic and of isotonic solutions of dextrose. In infants who had formerly lost a great deal of weight (from 400 to 500 Gm. in twenty-four hours), regardless of whether they were in a markedly toxic condition or not, it was noted that from ten to fifteen minutes following the subcutaneous injection of from 80 to 100 cc. of a 10 or 15 per cent solution of dextrose the infants became extremely restless and could not sleep. In the severe form of reaction, of which three instances were observed, motor unrest and even convulsions appeared. The infants became pale and had cold sweats, labored respiration and an exacerbation in their general condition. The pulse was small and filiform. In one case, meningeal manifestations appeared and the general condition of the patient became much worse. The same changes were noted in atrophic children following subcutaneous injections of a hypertonic solution of dextrose and were in marked contrast to the effects produced by subcutaneous injections of an isotonic solution of dextrose. From ten to fifteen minutes following the injection of an isotonic solution of dextrose the infants became quieter, slightly apathetic and sleepy. This condition lasted two or three hours. The author believes that the harmful effects of subcutaneous injections of hypertonic solutions of dextrose in toxicosis are the result of their osmotic action from the already dehydrated organism still more water is withdrawn and the result is an intensification of the exsiccosis. In the treatment of toxicosis in infants by means of subcutaneous injections of a solution of dextrose he now uses only an isotonic solution.

Blood Picture in Initial Fever in Tuberculosis—Arany designates initial fever in tuberculosis as the fever that appears between the time the infection is incurred and the time the

tuberculin reaction becomes positive. The average incubation period is from three to seven weeks and the fever lasts from four to eight, more rarely from fifteen to twenty, days. In the examination of the blood of five children during this period it was found that in all five there was a slight leukocytosis, absolute and relative neutrophilia and lymphopenia. The neutrophils showed degenerative changes (variations in the granulation of the cells, toxic granulation, vacuoles in the plasma and markedly pyknotic nuclei). The changes were not as well developed as those that are noted in septic conditions but were definite. Whereas in the leukocytic formula the regenerative displacement was slight, in the erythrocytes the polychromasia and basophil granulation were more marked than they were in the common infections of children.

Concurrence of Different Forms of Tuberculosis in Twins—Stramm cites an instance of the concurrence of different forms of tuberculosis in a pair of binocular twins. The two infants had been exposed to the same source of infection. The one developed a tuberculosis of the lung and hilus together with an erythema nodosum and the other developed a miliary tuberculosis. In the first infant the tuberculin reaction was strongly positive but in the second infant it was negative. The negative tuberculin reaction in the infant with the miliary tuberculosis is explained by the development of an anergy such as is noted in measles.

Simple Formula for Calculating Normal Body Weight of Children—For calculating the normal body weight of children aged from 1 to 12 years, Herrmann recommends the formula $y = 2z + 8$, in which y is the body weight in kilograms and z the age of the child in years.

Munchener medizinische Wochenschrift, Munich

77 2175-2214 (Dec. 19) 1930

- *Diagnosis and Treatment of Postoperative Peptic Ulcer of Jejunum. T. Fohl —p. 2175
- Röntgen Demonstration of Urinary System by Means of Iopax. H. Nahrath —p. 2178
- Epidemic of Paratyphoid B. Schottmüller. A. Pierach —p. 2181
- Treatment of Experimental Tetany in Animals by Means of Calcium Gluconate. A. Wittgenstein and A. Gaedertz —p. 2183
- Cancers of Uterus. Etiology, Frequency and Treatment. F. G. Dietl and I. Steffan-Tisen —p. 2183
- *Methods of Cervical Dilatation and Treatment of Abortion. F. H. Bardenheuer —p. 2186
- *Mode of Action of Commonly Used Depilatories. L. Abramson —p. 2187

Postoperative Peptic Ulcer of Jejunum—Fohl asserts that the postoperative peptic ulcer is most frequent after gastric enterostomies. Hyperacidity is also an essential factor, for hyperacidity and in anacidity, peptic ulcers are not noted after gastroenterostomy. However, gastroenterostomy is not the only operation that leads to peptic ulcer of the jejunum. The exclusion of the pylorus according to von Eiselsberg's method may likewise be followed by it. In fact, not a single method of resection excludes the possibility of a postoperative peptic ulcer. The first method of Billroth is perhaps the method after which peptic ulcers are rarest. The only real protection against peptic ulcers in the jejunum is gastroduodenostomy, because this operation does not expose the jejunum to hyperacidity. The diagnosis of postoperative peptic ulcer of the jejunum is difficult because of the absence of a pathognomonic sign. In many cases the symptoms are the same as those in cases of gastric or duodenal ulcer. However, if the anamnesis reveals that a gastric enterostomy or an exclusion of the pylorus has been done before the following signs indicate a peptic ulcer of the jejunum: (1) localized deep pain in the left mesogastric region, (2) occult or spontaneous hemorrhages, (3) dynamic disturbances in the evacuation of the stomach and intestine and occasional vomiting. In regard to the treatment of the postoperative jejunal ulcer the author states that conservative treatment is never advisable and surgical treatment should be given immediately. There is no special operative method for the postoperative peptic ulcer. The surgical treatment is always corrective, and its aim should be not only to remove the ulcer but also to correct the abnormal anatomic conditions created in the first operation. The author discusses several possibilities and then gives the detailed report of one case. The operative mortality is of course comparatively high, however, if the operation is successful, the prospects for permanent results are good. In order to prevent postoperative

ulcer it is of greatest significance not to perform a gastro-enterostomy or an exclusion of the pylorus when hyperacidity exists

Methods of Cervical Dilation and Treatment of Abortion—Of the various methods that are employed for dilation of the cervix uteri Bardeenheuer mentions metal dilators, laminaria tents, tamponade, metrectrics, surgical interventions such as incision of the os uteri or of the cervix, and digital dilation. The numerous methods show that there is a difference whether the dilation is performed during the nonpregnant condition, in the early months of pregnancy or in the later months of pregnancy. The author discusses mainly the treatment of abortion and of premature births. In the nonclimical treatment of abortion, vaginal tamponade is generally done. However, it has the disadvantage that the stasis caused by the tamponade may lead to infection. For this reason the tamponade should never be maintained longer than twelve hours. The author further discusses the advantages and disadvantages of laminaria tents. Dilation by means of the metrectric he considers as one of the best methods. He employed it in forty-two cases, namely, in twenty-five abortions, in five interruptions and in twelve cases of dysmenorrhea or for exploration of the uterus. The metrectric and its manipulation are described, and it is stated that the use of this instrument produces regular uterine contractions. In from six to fifteen hours the cervical canal has been dilated so that it is passable for one or two fingers. The main advantage of this method over tamponade or over the use of tents is that it permits the continuous discharge of uterine excretions. In several cases it was noted that the fetus or the placenta had been discharged through the open blades of the instrument into the vagina. The author advises against ambulatory use of this method, because rest in bed is necessary. However, the metrectric may safely be employed by the general practitioner in the private home.

Mode of Action of Commonly Used Depilatories—Abramson points out that for most depilatories the claim is made that they have a more lasting effect than shaving and that if they are used systematically for a longer period they will effect a permanent depilation without injuring the skin. The author investigated the mode of action of depilatories on animals and on human beings. He found that the depilatories do not influence the intracutaneous portion of the hair but that they become effective by a process of swelling which after from five to ten minutes makes the hairs brittle, so that they break off. The horny layer of the skin is at first not injured. However, after several applications inflammation and eczematization sets in. In their effect on the growth of the hair the depilatories do not differ from shaving. An increased growth of hair after one or several applications could not be detected when compared with shaving. On account of the eczematization of the skin that follows after repeated applications, the use of depilatories for therapeutic purposes should be limited. Depilatories may be used (1) for depilation in regions that are not readily accessible for razor and scissors, as for instance in the axilla, (2) in diseases of the skin or hair in which removal of hair is therapeutically desirable but in which shaving is not advisable, for instance, in folliculitis barbae et capitis. In trichophytosis of the head or of the beard, depilatories might be better than shaving because they prevent more effectively a spreading of fungi and a reinfection of the hairs. However, in both cases depilation is usually insufficient.

Wiener klinische Wochenschrift, Vienna

43 1525 1556 (Dec 11) 1930

- Operative Treatment of Goiter B. Breitner—p 1525
Extrasystole and Automatism D. Scherf—p 1527
Existence of a Hypotensive Pancreatic Hormone P. Gley and A. Kisthinos—p 1530
Local Anesthesia in Operative Treatment of Cancer of Rectum F. Mandl—p 1536
Nature and Various Forms of Angiomatosis K. Ullmann—p 1538
Tuberculosis in Nurslings A. Gotz—p 1542
Idem. S. Feilendorf—p 1543

Operative Treatment of Goiter—Breitner thinks that surgical treatment is not resorted to often enough or it is used too late. At any rate these mistakes are more frequent than the premature or unnecessary performance of an operation. Surgical treatment is absolutely necessary in goiters that cause

stenosis. Three cases are reported that illustrate how much needless suffering is due to a delayed surgical intervention. In cases of goiter in which a hypertrophication of the thyroid exists surgical treatment is indicated whenever a conservative treatment of the thyrotoxic manifestations is without effect or when frequent relapses occur. In regard to iodine therapy the author states that in thyrotoxic conditions iodine therapy is not advisable; however, administration of iodine preparatory to operations is helpful. The method of operation and the skill of the surgeon are of the greatest significance. Unilateral resection is not advisable. For especially difficult cases the author recommends the incomplete operation according to Crile. However, if operation is preceded by iodine therapy, this is rarely necessary. The duration of the operation is of greatest significance. Greater rapidity gives the better result.

Existence of Hypotensive Pancreatic Hormone—Gley and Kisthinos point out that some insulin preparations cause a reduction of the blood pressure. Tests revealed that the substance which reduces the sugar content of the blood does not have the hypotensive effect but that the sugar reducing hormone and the pressure reducing hormone are two different substances, and that insulin preparations which have a blood pressure reducing effect have not been sufficiently purified. The authors point out that it has long been known that the pancreas contains a blood pressure reducing substance, however, they were the first to isolate it. Further efforts were made to determine the nature of the blood pressure reducing substance. It was found that its effect is not due to the presence of choline, histamine or peptone but that the pancreatic hypotensive substance is capable of neutralizing the hypertensive action of epinephrine. It was also noted that the acute pulmonary edema that develops in animals that have been poisoned with epinephrine does not develop if the animals have been protected by an injection of the blood pressure reducing, pancreatic hormone.

43 1557 1588 (Dec 18) 1930

- Sympathetic Nervous System L. Schonbauer—p 1557
New Method of Dialysis E. Freund—p 1562
*Obstetric Shock N. Alders—p 1562
Value of and Indications for Newer Anesthetics in General Surgical Practice F. Starlinger—p 1565
*Use of Remedies of Apparently Antagonistic Action in Treatment of Gastric Disturbances L. von Friedrich—p 1569
Hypertonia of Arteries J. Pal—p 1570
Sepsis Problem P. Saxl—p 1571
Pharmacotherapy During Childhood H. Januschke—p 1572

Obstetric Shock—Alders limits the term obstetric shock to a condition that is usually characterized by paleness, cyanosis, fainting, decreased blood pressure, profuse perspiration and air hunger, and which develops one or several hours after labor without there being an anatomic foundation and without immediately preceding mechanical or chemical irritation, but caused only by a spontaneous change in the distribution of the blood. This disease corresponds to the condition that surgeons term secondary wound shock. The author does not wish to combine in the term obstetric shock all shock conditions regardless of etiology, that develop after labor, but he wishes to distinguish between shock after labor and obstetric shock. He mentions the various conditions to which the term should not be applied. The exclusion of all these conditions limits the term obstetric shock to rare cases. In an obstetric clinic in Vienna, among 24,800 confinements there were only six such cases. However, this number applies to severe cases, and it is possible that obstetric shock of minor severity is more frequent. The author gives several case reports and then discusses the pathogenesis of obstetric shock. He thinks that obstetric shock is a manifestation of toxicity due to products of decomposition of proteins in short, a toxic wound shock. For the treatment of obstetric shock he recommends blood transfusion or intravenous injection of from 300 to 500 cc of a 10 to 20 per cent solution of dextrose.

Remedies of Apparently Antagonistic Action in Treatment of Gastric Disturbances—Von Friedrich points out that generally when several remedies are used together the effect of synergistic action are combined. Remedies with an antagonistic action or with an apparently antagonistic action are rarely used together. However, such combinations are not entirely unknown. Von Noorden and Salomon for instance recommend the combined use of hydrochloric acid and sodium carbonate in

subacidity and anacidity when the patient is troubled with heartburn. The author describes another example of antagonistic therapy. In some instances of gastric catarrh in which the roentgen examination gives negative results and in which subacidity or anacidity exists and pathologic changes in the gall-bladder may be excluded the patients frequently complain of pain in the epigastric region and behind the sternum, immediately after eating. Medication with hydrochloric acid and pepsin is often not sufficient because the pains are extremely persistent. In such instances the author attempted the combined application of hydrochloric acid and atropine. These two medicaments appear to work antagonistically. The solution of hydrochloric acid and pepsin serves as a substitute for the deficient gastric secretion. It is known that atropine by its influence on the vagus suppresses the gastric secretion. However, the author found that small doses of atropine cause a temporary stimulation of the muscles of the stomach without influencing the function of the pylorus and the gastric secretion is likewise not influenced. The small doses of atropine should be taken before the meal, whereas hydrochloric acid should be taken in large doses during the meal. Dietary and other therapeutic aids do not become superfluous as a result of this therapy.

Zeitschrift f Geburtshilfe u Gynakologie, Stuttgart

99 1195 (Dec 30) 1930

- *Pyemia Ligation of Veins M Martens—p 1
- Id Early Diagnosis and Prognosis Kricke—p 35
- *Leukocyte Picture in Puerperium E Fruvet—p 58
- *Puerperal Fever Prognostic and Diagnostic Significance of Chills G Schafer—p 71
- Microscopically Nonspecific Granuloma of Vulva C. W Haupt—p 95
- Pregnancy Reaction of Gonads of the New Born H O Neumann—p 100
- Hereditary Transmission of Tendency to Twin Pregnancy G Dahlberg—p 136

Pyemia Ligation of Veins—Martens discusses the results he has obtained in the treatment of puerperal pyemia by means of venous ligation. He believes that puerperal pyemia is caused by a septic thrombophlebitis. The diagnosis is made on the basis of the anamnesis, the temperature curve, the pulse curve, the blood picture (shifting to the left), the thrombocytopenia, the erythrocyte sedimentation speed, the decreased hemoglobin content of the blood, the general condition of the patient and the results of palpation. At times the positive demonstration of the continuous and increasing bacterial content of the blood is of value but the negative observation is not. Because of the inefficacy of all other forms of treatment and the rarity of spontaneous recoveries, venous ligation should be performed as soon as the diagnosis is made. The extraperitoneal procedure is to be preferred. As a rule the extirpation of the diseased veins is unnecessary. Concurrent parametric or periphlebotic abscesses and phlegmons should be opened and drained when the veins are ligated. If it is evident that the involvement is unilateral, the veins of only one side should be ligated, particularly if the general condition of the patient is poor. If, however, the pyemia continues following unilateral ligation, another operation should be performed and the veins on the other side should be ligated. The operation is not contraindicated even in the presence of metastases.

Leukocyte Picture in Puerperium—According to Fruvet, labor produces a leukocytosis accompanied by acidosis. The most noteworthy feature of the leukocytosis is the increase in the polymorphonuclears, which in most of the cases show a marked shifting to the left. The number of lymphocytes and eosinophils is greatly decreased. After a few days the number of polymorphonuclear leukocytes returns to normal and the number of eosinophils is increased. In the first four days the number of neutrophils and lymphocytes shows a relative increase but by the end of that time the number has returned to normal. From the fifth day the reaction of the blood is normal but the blood picture shows a marked lymphocytosis for a few days. The causes of these changes are the retrogressive processes in the uterus which impose increased demands on the mesenchyme and the lymphocytic elements of the peripheral blood. These changes represent what occurs under completely normal conditions. Emphasis is laid on the extremely delicate reaction capacity of the blood and on the fact that slight disturbances in

the puerperium are frequently accompanied by marked variations in the blood picture. This fact should be given particular consideration with reference to the prognostic significance of the blood picture in the puerperium.

Puerperal Fever Prognostic and Diagnostic Significance of Chills—Schäfer asserts that the occurrence of only one or two chills in puerperal fever is of favorable prognostic import because they indicate a reaction in which the infection is rapidly overcome. Beginning with the third chill, the mortality increases. The number of chills varies within wide limits. The longer the time that elapses before the appearance of the first chill, the more favorable is the prognosis. If the series of chills does not begin until after the first week post partum, the mortality is extremely low. The more frequent and longer the intervals are between the chills, the lower is the mortality. A fever that persists during the intervals between the chills is not of diagnostic or prognostic significance. As a basis for comparison of the pulse curve, a pulse rate of 120 is given. The chill is neither a specific symptom of pure pyemia nor proof of the absence of sepsis. A large proportion (30 per cent of average) of all puerperal infections extend simultaneously through the lymphatics and through the blood. With an increasingly large number of chills, a hematogenous extension becomes more and more probable. When the number of chills exceeds ten it is probable that an originally purely pyemic process has become converted into a septic one by inflammatory erosion of the walls of the blood vessels. The number of the chills and their sequelae are not dependent on the kind of bacteria present. Manual separation of the placenta and palpations during the puerperium cause a high percentage of pyemic processes.

Zeitschrift fur urologische Chirurgie, Berlin

31 1 62 (Dec 18) 1930

- Renal Dystopia Etiologic Factors K von Wolff—p 1
- Hematuria in Undulant Fever Case O Henning—p 17
- *Ureteral Calculi Conservative Treatment I S Tschernjak—p 1
- *Metastatic Carcinoma of Bladder G Bodon—p 40
- Phimosia Plastic Operation E Sereghy—p 48

Ureteral Calculi Conservative Treatment—On the basis of the good results he obtained with solution of calculi in nine of eleven cases of ureteral calculi and the unsatisfactory results in three cases of calculi of the renal pelvis, Tschernjak concludes that, since this preparation increases peristalsis in the ureters and produces peristalsis in cases in which the strength of the muscle has been exhausted it is a highly valuable and the treatment of ureteral calculi that are not too large. Under its influence there occurs an increased elimination of salts and other pathologic products out of the urinary tract. Solution of calculi does not have an appreciable action on calculi in the pelvis of the kidney. In the treatment of ureteral calculi the solution of calculi one must consider the tonus of the smooth muscle, which is under the influence of the sympathetic nervous system, and modify it with morphine, camphor and atropine preparations. The injections may be given close together or long intervals. Solution of calculi may be given prophylactically following the removal of calculi from the pelvis of the kidney and should be tried also in stasis manifestations in the pelvis of the kidney and in atony of the ureter.

Metastatic Carcinoma of Bladder—Bodon emphasizes the extreme rarity of cancer of the bladder secondary to cancer of a distant organ. He reports the case of a woman, aged 50, whose left breast had been amputated five years previously for cancer. Two weeks after admission to the hospital she died under the signs of increasing cardiac weakness. Postmortem examination revealed that the bladder was enlarged. In the mucosa there were numerous white, slightly projecting cancer nodules with many small hemorrhages chiefly on the edge of the nodules. Numerous tumor nodules were present also in other parts of the body. From the macroscopic picture it is clear that all the cancer nodules were metastases from the cancer of the breast that had been removed five years previously. Microscopic examination revealed that the metastasis to the bladder had occurred through the lymphatics. From the bladder the cancer had extended to the axillary and pectoral lymph nodes. From here the tumor cells had passed through connecting lymphatics into the bronchial and tracheal lymph nodes and from these to the nodes at the arch of the aorta. The tumor

had then extended retrogradely through the retroperitoneal aortic lymph nodes to the hypogastric nodes. Through the lymphatics of the true pelvis it had extended to the bladder.

Zentralblatt fur Chirurgie, Leipzig

57 3089 3152 (Dec 13) 1930

- *Relation of Trauma to Appendicitis F Licken—p 3095
- New Extension Apparatus for Treatment of Fractures and Dislocations Y Azuma—p 3097
- *Relative Frequency of Cancer of Breast in Married and in Unmarried Women O Pikkaramen—p 3099
- Differential Diagnosis Between Congenital Dislocation of Hip and Congenital Coxa Vara H Krukenberg—p 3108
- *Obesity Associated with Exophthalmic Goiter S Portugalow—p 3109
- Case of Phlegmon of Stomach O Bsteh—p 3116
- *Case of Traumatic Thrombosis of Portal Vein Terminating in Recovery P Rupprecht—p 3118
- *Double Appendix Is There Such an Entity? W Goldschmidt—p 3123

Trauma and Appendicitis—Licken is not convinced that trauma causes appendicitis. He cites the case of an athlete who sustained a severe jolt of the abdomen, especially on the right side, while performing on an apparatus in the gymnasium. He had seemingly been in good health, except for some discomfort in the right inguinal region and irregularity of bowel movement. Immediately after the accident, he developed symptoms that led to a diagnosis of acute appendicitis, probably of traumatic origin. At the operation the appendix appeared to be quite normal in appearance but not in position. It was of the recessus retro caecalis type with the tip adherent in a peritoneal pocket. The important feature of this case was that when the abdomen was opened a tear extending one third the width of the muscle was found in the right rectus muscle. The sheath of the muscle was intact, but a small hematoma underneath shining through led to the discovery of the tear in the muscle. Further examination of the appendix failed to disclose anything abnormal. The author points out that here is a case in which the trauma might have been charged with producing appendicitis, but there was no appendicitis. The abnormal location of the appendix would account for the symptoms present before the trauma and the rupture of the rectus muscle would account for the subsequent symptoms, although these pointed rather definitely to appendicitis—especially the leukocytosis, the resistance in the McBurney area, and a positive Rovsing sign. Hence it is pointed out, in all cases of abdominal injury it is important to rule out possible injury of the rectus muscle.

Incidence of Carcinoma of the Breast in Married and in Unmarried Women—Pikkaramen quotes figures to show that the incidence of breast carcinoma is relatively greater in unmarried than in married women, at least in Suomi Finland whence Kalima analyzed 600 cases in 1914. The author reviews these 600 cases and adds 505 of his own cases and reaches a similar conclusion but specifies that this applies only to women from 35 upward. In the half decades 25-30 and 30-35 the opposite is the case. He contends, therefore, that lactation cannot be regarded as a contributory cause to the development of breast cancer.

Obesity Associated with Exophthalmic Goiter—Five cases of obesity occurring among eight six cases of exophthalmic goiter are the basis of Portugalow's paper. The ages of the patients varied from 19 to 25. They were all women. He believes that endocrine dysfunction as a whole is the cause of the obesity.

Traumatic Thrombosis of Portal Vein—Rupprecht cites the case of a man who, while caring for a horse, was kicked in the abdomen by the animal and fell into an adjoining stall. He was slightly breathless when on his feet again but returned to his work. Six days later he collapsed losing consciousness. He was taken to the hospital. Examination disclosed extreme distention of the abdomen meteorism in the flanks extreme sensitiveness to touch, ascites increasing rapidly in degree and pain over the spleen. Six liters of fluid was withdrawn. The liver could now be felt to be considerably swollen. Next the legs became edematous and then the scrotum the latter extremely so. The patient also complained of stomach distress. The scrotum became gangrenous and the left testis had to be removed. Within sixty days after the accident the superficial abdominal veins began to distend and eventually a well formed caput medusae was present, the lowermost veins measuring two fingers

in size. The abdominal fluid had to be withdrawn repeatedly for a period of five years the amount withdrawn varying considerably. The greatest quantity of fluid obtained was 36 liters. Finally the ascites ceased and the patient is now, ten years after the accident apparently in good health. No operation was performed, therefore this must have been a case of development of sufficient collateral circulation to take care of the thrombosed portal vein.

Double Appendix—Goldschmidt warns against accepting with too much credulity the statement that a double appendix ever is present. He points out how such a mistake may be made and questions seriously the existence of such an entity. He cites a case in which there was apparently a double appendix but on careful examination it was shown quite definitely that during a previous attack of appendicitis the organ had become attached at its tip to the wall of the cecum and that a pathologic amputation had occurred later, thus leaving seemingly two appendices.

Zentralblatt fur Gynakologie, Leipzig

54 3137 3200 (Dec 13) 1930 Partial Index

- Submucous Cavernous Hemangioma of Uterus G H Bartsch—p 3138
- Rectal Gonorrhea in Women A Temesvary—p 3140
- Late Postpartum Hemorrhages P Weiss—p 3146
- Unequal Development of Fetuses in Plural Pregnancy H Uffenorde—p 3156
- *Caesarean Section with Abdominal Amputation of Corpus Shortly Before or During Labor in Cases of Impacted Myoma M Samuel—p 3164
- Two New Devices for Minor Gynecology Vaginal Occlusion Tampon and Cup Pezary A Stern—p 3166

Cesarean Section with Abdominal Amputation of Corpus, Shortly Before or During Labor, in Cases of Impacted Myoma—Samuel stresses that in certain cases of impacted myoma, a cesarean operation with amputation of the corpus uteri is advisable. He illustrates this in three cases. Although the literature contains reports of a number of cases of impacted myomas in which the tumor was born shortly before or during labor so that after the birth took a normal course the author agrees with Albrecht, who states that if at the beginning of labor the myoma obstructs the pelvic inlet or the pelvic canal an expectant attitude is wrong. In such cases the abdominal section is necessary. A vaginal intervention is not advisable. The author asserts that it is wherever possible, even in cervical myomas, to amputate the uterus in such a way that a portion of the uterine mucous membrane remains. This is necessary in order to preserve the regular sexual function.

54 3201 3264 (Dec 20) 1930

- *Influence of Renal Activity on Basal Metabolism in Gravidis H Krukenberg and H Alberts—p 3201
- Paranephric Abscess with Perforation into Uterus and Simultaneous Pyelonephritis During Puerperium M Henkel—p 3207
- *Significance of Intravenous Iyodography for Diagnosis of Renal Tuberculosis S Perlmann—p 3208
- Function of Stump of Ureter and of Upper Urinary Passages Following Implantation of Ureter into Bladder F von Mikulicz Radecki—p 3216
- Demel's Ureter Autolasty with Aid of Urinary Bladder in Man A Rudin—p 3237
- Diagnosis and Therapy of Extravascular Orifice of Ureter B Ottow—p 3239
- Perforation Injury of Bladder During Abortion K Jett—p 3260

Influence of Renal Activity on Basal Metabolism During Pregnancy—Krukenberg and Alberts first point out that during pregnancy the basal metabolism is generally somewhat increased. They attempted to determine to what extent the renal activity of pregnant women influences their basal metabolism. Other authors who investigated the metabolism of the kidneys in animals had found that their metabolism amounts to from 7 to 8 per cent of the metabolism of the entire organism. Observations on human beings revealed that the metabolism of the kidneys amounts to from 4 to 6 per cent of that of the entire organism whereas the weight of the kidneys is only 0.6 per cent of the body weight. The authors made their tests on fifty nine pregnant women all of whom were in the advanced stage of pregnancy. In order to accustom the patients to the apparatus the basal metabolism was determined several days before the test. On the day when the experiment was made the women were given 1 liter of weak tea. Several days before the test the diet had been protein free. The authors give a detailed report of three cases with charts showing the basal metabolism the

elimination of water and the specific gravity of the urine. They also give tabular reports of several other cases. They found that during the water test the basal metabolism is increased, and the cause of this is the renal activity.

Intravenous Pyelography in Diagnosis of Renal Tuberculosis—Perlmann asserts that the favorable results of nephrectomy in unilateral renal tuberculosis are largely due to the improved methods of urologic examination. First he discusses cystoscopy and the indigo carmine test. In a large percentage of cases these two diagnostic methods are satisfactory. In other instances they cause difficulties and are therefore not advisable, and in such cases intravenous pyelography has proved helpful. The author gives several case reports which illustrate the significance of pyelography by means of intravenous administration of the contrast medium. This method is helpful in cases of unilateral tuberculosis but it is particularly indicated in bilateral disorders in contracted bladder in case of strictures of the ureters or the urethra and for control examination after unilateral nephrectomies. Intravenous pyelography is without danger for the patient and reveals the anatomic conditions of the urinary tract. However as a functional test it is alone not sufficient and it has to be supplemented by other methods. In patients with tuberculosis of the bladder intravenous pyelography is much less painful than intravesical examination.

Vrachebnaya Gazeta, Leningrad

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- Bacteriophage as Factor of Infection. I. Ierets—p. 1557.
Recurrences in Patients with Scarlet Fever. S. Shtern and E. Rubel—p. 1560.
Epidemiologic Observations and Local Immunization Against Scarlet Fever. K. Turjetskiy and C. Maslovskiy—p. 1566.
Intubation in Treatment of Laryngeal Stenosis from Diphtheria. P. Rylov—p. 1570.
Study of Sympathetic Neurosis. Yu. Kotikov—p. 1576.
Present State of Serodiagnostics of Syphilis. T. Zalkind—p. 1579.
Auto-Limotherapy in Cases of Skin Disease. A. Tereshlovich and A. Tokuniev—p. 1583.
*Autohemotherapy in Cases of Furunculosis. A. Balmagiyaz—p. 1586.
*Treatment of Anorexia in Children. I. Kazis—p. 1588.
Glossarcoma in Child Aged Five. V. Faybushevich—p. 1592.
Method for Tamponade of Urethra in Cases of Chronic Gonorrhea. A. Ventsel—p. 1596.

Results of Autohemotherapy in Cases of Furunculosis

—Balmagiyaz had used the treatment in ninety boys aged from 10 to 17, pupils of a labor colony. In one group of thirty patients he used treatment with the usual remedies as among others, painting of the furuncles with tincture of iodine, applications of compresses with Buron's solution or of moist and hot poultices. Passive hyperemia and curettage, among others, were used when the furuncle was mature. In another group of thirty patients exclusive treatment with Besredka's antiviral was used and in the remaining group autohemotherapy was tried. The treatment in the first group did not prevent the formation of new furuncles. The effect of the treatment was insignificant in the second group. It also proved to be expensive and inconvenient, since the compresses ought to be renewed every four hours. For the autohemotherapy, the blood was withdrawn from the patient's ulnar vein and injected subcutaneously, usually in the subclavicular region. The blood became resorbed in two or three days, in rare cases the resorption was slow. The amount of blood of a single dose varied from 8 to 22 cc., the total amount of blood injected varied from 8 to 90 cc. In moderate cases, the single dose of blood was from 10 to 20 cc., in severe cases, the dose was increased to at least 15 cc. The injections were usually given at intervals of from two or four days. The autohemotherapy resulted in a rapid healing sometimes within three days. The autohemotherapy was well tolerated, there were neither local nor general reactions. The author stresses that the results were encouraging besides, the treatment is within the reach of every one and therefore can be commonly used.

Pilocarpine for Treatment of Anorexia Nervosa in Children—The pathogenesis of nervous anorexia is not yet ascertained. Nevertheless there is evidence that the fundamental cause of the disease consists in an insufficient irritability of organs controlling secretion of the digestive glands. Therefore the treatment aims to influence the peripheral ends of the secretory nerves. Administration of pilocarpine by the mouth

or subcutaneously increases the secretory activity of the salivary, gastric and intestinal glands and the pancreas as well as the sweat glands. The treatment with pilocarpine was tried in forty-two children, aged from 2 to 10 years, suffering with nervous anorexia. None of the patients presented an organic disease. Pilocarpine hydrochloride was given in the form of a powder, in which it was mixed with sugar, or in an aqueous solution. A single dose varied from 0.001 to 0.003 Gm., it was taken from fifteen to twenty minutes before meals, three times daily for three days. The results, Kazas says, were remarkable. In almost all cases the appetite became normal after three days. Only in two instances was it necessary to repeat the three days' treatment. Pilocarpine has not caused cardiac vascular or respiratory disturbances. Later the pilocarpine was mixed with a 2 per cent solution of hydrochloric acid. The author had not had the opportunity to use the treatment in adults. Cardiac diseases, bronchial asthma and acute respiratory diseases are contraindications for treatment with pilocarpine.

Norsk Magasin for Lægevidenskapen, Oslo

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- Physiologic Hematopoiesis and Hemolysis in the New Born. L. Salmonsén—p. 1299.
Reaction of Pancreas After Operations on Stomach and Biliary Tract. R. Ringdal—p. 1317.
Hemangioma Six Cases. F. Hartz—p. 1335.
Slight but Fatal Traumatic Hemorrhages of Brain So-Called Duret Lesions. Medical Study. O. Berner—p. 1349.
*Treatment of Hemophilia with Vitamin Preparation. H. Dyrbo Hansen—p. 1372.
*Sueh's Lesion. W. F. Baastad—p. 1385.
*Congenital Myotonia in Brother and Sister. K. Moe—p. 1397.
Oldest Description of Ileus. B. Ebbell—p. 1393.

Hemangioma Six Cases—Hartz describes two cases of hemangioma of the retina (von Hippel's disease) in patients aged 17 and 55, respectively, a case of hemangioma in the cerebellum in a boy aged 16, a case of large cavernous hemangioma in the lower end of the spinal cord and cauda equina in a woman aged 41 and also two cases of multiple hemangiomas of the liver in patients aged 36 and 24 respectively.

Slight but Fatal Traumatic Hemorrhages of Brain So-Called Duret Lesions—Berner shows that a slight trauma may cause hemorrhages in the region around the fourth ventricle. He describes the close relation between Duret's lesions and concussion of the brain, discusses the sort of spontaneous hemorrhages in the brain with especial attention to the so-called primary ventricular hemorrhages originating from the choroid plexus or a subependymal blood vessel, and treats of the probability of spontaneous origin of a hemorrhage in the fourth ventricle.

Congenital Myotonia in Brother and Sister—Moe describes almost identical cases in children aged 5½ and 1½ respectively. The musculature of the lower limbs was so hypotonic that the patients could neither stand nor walk. The musculature of the trunk was also affected. In the one there was atrophy of the hips, muscles of the jaw and sternocleidomastoid muscles. During observation for a year, no progression was noted.

Ugeskrift for Læger, Copenhagen

92 1151 1170 (Dec. 4) 1930

- *Two Cases of Induced Psychosis ('Folie à Deux'). C. Clemmesen—p. 1151.
Mental Weakness—Psychopathy. Remarks on Terminology. A. Wamm—p. 1154.
Treatment of Scabies in Frederiksberg Community. H. Boas—p. 1155.
Lesions Due to Thermometer. H. C. Ringsted—p. 1155.

Two Cases of Induced Psychosis ('Folie à Deux')—Clemmesen's first case, of typical communicated insanity, was in the husband of a woman in whom an acute psychosis developed after a psychic trauma and culminated in six weeks' violent psychomotor unrest and hallucinations. The husband whose history pointed to psychopathic tendency, recovered after isolation. The second case, of induced psychosis with chronic course occurred in a mother who so completely accepts the ideas of her son with paranoid development at the age of 17 that without knowledge of their history it would be difficult to determine which is the primary case.

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RADICAL OPERATIONS FOR MAJOR TRIGEMINAL NEURALGIA

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From a personal experience with 654 major operations for major trigeminal neuralgia, *tic douloureux*, I am convinced that from every point of view—relief to the patient, the almost total elimination of operative hazards and complications, and the invisible scar—the operation is one from which the surgeon derives greater satisfaction than after any other surgical experience.

In the neurosurgical clinic of the Hospital of the University of Pennsylvania an exceptional opportunity has been afforded to observe neuralgias of the trigeminal system. Ever since Spiller in 1898 proposed section of the sensory root as a substitute for excision of the ganglion of Gasser, I have followed this method and, more because of my associate Dr. Spiller's suggestion than for any other reason, an exceptional number of patients have been referred to this clinic for surgical relief. In this period of approximately thirty years, 1,317 cases of major trigeminal neuralgia have been admitted to the clinic, and of this number the major operation has been performed in 654 cases. During this period the mortality has been reduced to 0.26 per cent.

By "major trigeminal neuralgia" I imply that form of neuralgia otherwise referred to as *tic douloureux*, and I refer to a symptom complex so easily recognized by those familiar with its expression, so definite and unmistakable in its various constituent features that mistakes in diagnosis should be very exceptional. That mistakes may be made once in a while may be admitted when one realizes that there are almost no objective symptoms, except the vasomotor phenomena and the facial spasm. It would be quite possible for a patient familiar with the disease to describe so accurately the features of trigeminal neuralgia that one might with perfect propriety advise and resort to operation.

With an individual experience of 1,317 cases, one would quite naturally draw the conclusion that the disease is not infrequent in the physician's rounds. Such, however, is far from the case. I once inquired of a general practitioner, who at the age of 60 had had an enormous experience in private and hospital practice, how many cases of major trigeminal neuralgia he had seen. He could remember but two. The answer was as I had expected, and there are many practitioners who have never seen a single case. Hence, while contact with the neuralgic patient is a daily experience in our clinic, many a practitioner has had no opportunity to make any observations at all, and it follows, as one would expect, that the successful measures for controlling pain are not matters of common information.

The diagnostic features of major trigeminal neuralgia are so characteristic and distinctive that I shall not dwell on them here but refer the reader to earlier contributions.¹

That one is occasionally puzzled I admit, but under these circumstances a ready diagnostic measure in the alcoholic injection is always at hand. If an effectual alcoholic injection, that is, one which induces anesthesia at once in the zone supplied by the division injected, does not give absolute and immediate relief of pain in the same distribution, whatever form of neuralgia the patient may have and whatever the character and intensity of pain, that patient does not have major trigeminal neuralgia. From this deduction there is no avenue of escape. The term trigeminal neuralgia, or *tic douloureux*, I find is loosely used at times, especially by those who deal with the sinuses. There is no relation between sinus disease and *tic douloureux*, and this is another indisputable statement to which there is no exception.

Nothing can be accomplished by a discussion of the etiology. This discussion would lead only into the field of speculation. It might serve many a future patient a useful purpose to state emphatically that dental and sinus infections are not factors. The teeth should be left alone and the sinuses left undrained.

The major purpose of this contribution is to relate my experience with the 654 major operations. The major operation is not urged on every patient. It is my practice now, as it always has been, to leave to the patient the choice as to whether he shall have an alcoholic injection or submit to the operation. Low as the mortality is, it should be the patient's privilege to decide after he understands fully what may be expected of each.

The first radical operation, excision of the gasserian ganglion, for the relief of trigeminal neuralgia was proposed simultaneously by Krause of Berlin and Hartley of New York in 1894. In 1898 came Spiller's proposal that, as a substitute for excision of the gasserian ganglion, the sensory root of the ganglion be cut. I always liked Van Gehuchten's² paraphrase of this suggestion: "the physiologic extirpation of the ganglion." The first purposeful section of the sensory root for the relief of trigeminal neuralgia was performed in this clinic in 1901.³ Since that time many modifications in the performance of the operation have been made, some of major and some of minor importance. Of the major modifications there are two. In 1915 I practiced for the first time subtotal section of

1 Frazier, C. H. and Spiller, W. C. *Philadelphia M. J.* 8: 1079 (Dec. 14) 1901. *Physiologic Extirpation of the Ganglion of Gasser*. 1. A. M. A. 47: 943 (Oct. 1) 1904. Frazier, C. H. *Division of Sensory Root on Both Sides*. *Id.* 57: 1730 (Nov. 20) 1906. Frazier, C. H. and Whitehead, Edward. *Brunn* 48: 468 (Dec.) 1905. Frazier, C. H. *Subtotal Section of Sensory Root for Relief of Major Trigeminal Neuralgia*. *Arch. Neurol. & Psychiat.* 13: 18 (March) 1925.
2 Van Gehuchten, A. *Le neuraxe* 5: 192, 1903. *Lev. de l'Annuaire M. Bull.* 17: 50 (April) 1904.
3 Spiller and Frazier. (For name of reference.)

the sensory root but did not report the results of my experience until 1925.⁴ The fundamental reasons for the introduction of this modification will be found in a subsequent article. The outstanding advantage of this variation in technic, which implied conservation of the ophthalmic portion of the sensory root, was the total elimination of trophic keratitis as a complication. Of this I shall speak later.

The second major modification of the operation was the conservation of the motor root first proposed in 1918 but not referred to in print until 1926.⁵ To

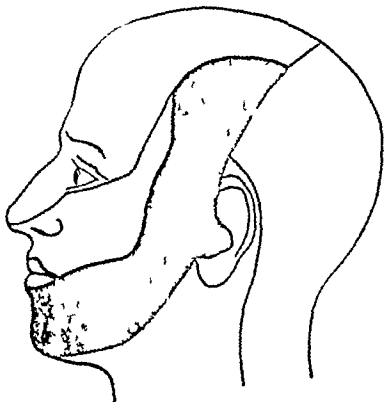


Fig. 1—Area of anesthesia five days after section of the outer third of the sensory root

conserve the innervation of the temporal, masseter and pterygoid muscles has obvious advantages, chiefly these to conserve the power of mastication, to better the cosmetic results and to permit the radical operation on both sides, should the disease be bilateral. That the latter is not a theoretical advantage was dramati-

cally illustrated in a patient from Lima, Peru, on whom I had first operated in 1917. She returned in 1926 with pain on the opposite side. In 1917 the motor root was not conserved and if I did not conserve the motor root at the second operation on the opposite side, the situation would be tragic. As it was my initial experience with such a contingency I urged the patient to have an alcoholic injection. She absolutely refused. I told her she would not be able to close her mouth or chew for the rest of her life if my technic was not perfect, but even then she would not release me. So the operation was performed, the motor root conserved, and all was well.

That the results of the major operation are in the whole eminently satisfactory, a host of patients will testify. With respect to any operation, one must speak of the risk, naturally it is uppermost in the mind of the patient. Desperate as the situation seems, for the pain has become intolerable, the patient's first question is: What are the risks of operation? A direct answer must be given, and if the patient is told that there has been in this clinic but one fatality in the last series of 377 cases, his apprehension on this score is at once relieved. That the operative hazard could be reduced to zero in any large series seems improbable, especially as one is dealing with many patients in the sixties and seventies. In my clinic one patient died ten days after the operation from apoplexy, while another, in the hospital at the same time awaiting operation, died from the same cause. Whether in the hands of many surgeons the subtemporal operation on the sensory root, as recently advocated, will ever be as free from operative hazards as the temporal route, is regarded by those competent to judge as too unreasonable even to answer.

The patient's second question is: Are the results permanent? Since the sensory root in whole or in part cannot undergo regeneration after it is once divided,

the answer is obvious. Frankly I admit on two occasions having overlooked a single fasciculus, once of the second and once of the third distributions, but I rather welcome this opportunity to admit a human imperfection, as I am always somewhat incredulous of the 100 per cent surgeon. In these two cases there was a recurrence, and a second operation was performed. But in principle the operation, perfectly performed, is essentially radical and implies permanent relief. Of this guarantee the patient is often skeptical, so often has he been disappointed by many such assurances by other methods of treatment, inappropriate as they are.

Many patients have been given a lurid account of the operation before they consult the physician. Many a physician today harks back to the operations of the nineties. And his patient has been warned. There is a high mortality, there is a likelihood of facial disfigurement, he may lose the sight of one eye.

Of facial disfigurement there is this to be said. The scar is invisible, but in two cases in a hundred, one may anticipate a transitory facial paresis, which makes its appearance from one to seven days after operation, slow in its development and slow but sure in its recovery. There has been much speculation as to its etiology, and while one cannot speak dogmatically, I am reasonably sure that the paralysis is due to injury to the great superficial petrosal nerve. Furthermore, I think the complication may be avoided if one takes a simple precaution in technic.

In the triangular space posterior to the ganglion, if one elevates the temporal lobe extradurally, one finds the base of the skull still covered with a membrane. Anatomically it is undesignated, but it may be assumed to be a continuation of the envelop of the gasserian ganglion. Underneath this membrane courses the great superficial petrosal nerve, and it is here and here on that the nerve is exposed to injury. Hence one should have respect for this small triangular area and never bare the bone posterior to the ganglion.

Now the question of most concern to the patient misinformed as he so often is has to do with vision. In the early days when total excision of the gasserian ganglion or total section of the sensory root were the routine operations, trophic keratitis was not an uncommon complication, troublesome at best, serious if neglected. But today trophic keratitis is no longer a menace, and the reader must not be misled by statements to the contrary.

It is clearly stated in my article of 1925⁴ that, since I had modified the technic to conserve the ophthalmic portion of the sensory root, keratitis was no longer a complication and when the article was written this modification had been practiced ten years, that is since 1915. Despite the positive character of the statement Dandy⁷ referring to a paper by my associate, Dr. F.

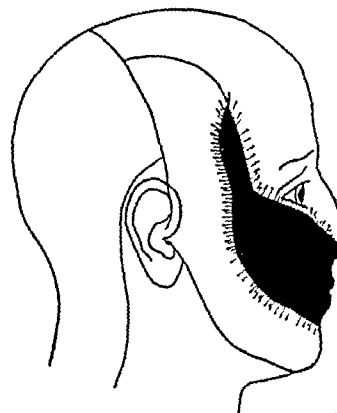


Fig. 2—Area of anesthesia ten days after section of the middle fasciculi of the sensory root

4 Frazier (footnote 1 fifth reference)
5 Frazier and Whitehead (footnote 1)
6 Frazier (footnote 1 third reference)

7 Dandy, W. E. An Operation for the Cure of Trigeminal Neuralgia. Partial Section of the Sensory Root at the Pons, Arch. Surg. 18 (Feb.) 1929.

Grant,⁸ states that "with Frazier's subtotal radiculotomy, Grant gives the percentage of cases of keratitis as about 10." Dr Grant wrote, "None of those cases in which the inner upper fasciculus of the root was saved showed any corneal complication." Dandy's statement is so at variance with the presented facts that I take this occasion to call the attention of the profession to the misquotation. Not only is it a matter of scientific interest, but if this impression should prevail among physicians and their patients, there would be needless concern and apprehension about a complication that no longer occurs.



Fig 3—Area of anesthesia seven days after section of the outer two thirds of the sensory root.

At a meeting of the Neurological Society at Baltimore, June 13, 1930, following Dandy's presentation of two patients recently operated on, there was an informal discussion and interchange of views as to the cerebellar approach for tic douloureux. While no corneal ulcer or even a suggestion of corneal injection had devel-

oped before the patients were discharged, nevertheless there were verbal reports of two corneal ulcers after discharge and one of total deafness on the side that had been operated on. Dandy corrected an earlier impression that, by cutting the outer half of the sensory root, objective pain sensation was lost and tactile sensation preserved. What he meant to say was this: that by cutting the outer half of the sensory root the subjective pain of trigeminal neuralgia was cured. In evaluating the relative merits of the accepted temporal route and the proposed cerebellar approach, these statements must be given consideration. Corneal ulcer, and damage to the auditory nerve and to the cerebellum with troublesome ataxia are possible even though occasional complications. But apart from these complications there seemed to be almost unanimity of opinion that the cerebellar approach, if accepted generally as a substitute for the temporal route, would inevitably be attended with a decidedly higher mortality. When dealing with an operation that is one of choice and not of necessity, so far as concerns life, the mortality rate will always be the deciding factor.

I shall not describe the technic of the operation step by step, as this may be found in a recent contribution⁹ but merely make some passing comments which those who perform the operation only occasionally may find helpful.

Often as I have performed the radical operation, I never approach one with any sense of assurance that it will be wholly without technical difficulties. Though operating in a field perfectly familiar in every detail, I find the greatest variation between one case and another. For example, in one case the dura may be unusually thin and so plastered to the skull that it seems impossible to separate it, especially in the temporal region without penetrating it in more places than one. This is not a matter of great moment but it is exceed-

ingly annoying. In the next case one may easily separate the dura and only a moment or two passes before arriving at the foramen spinosum. In one case the course of the posterior branch of the middle meningeal artery is so low that it may be torn as one makes the initial perforation of the skull. In some cases, especially in the dolichocephalic skull the middle fossa is deeper and the ganglion relatively far forward. It is a good plan always to make a perforation in the dura as soon as the cranial opening is made to allow the cerebrospinal fluid to escape. This facilitates the elevation of the temporal lobe, especially in those cases in which there is an unusual amount of fluid in the sub-arachnoid space, and it is surprising how the amount varies.

After he has plugged the foramen spinosum with cotton, and cut the middle meningeal artery and vein—and there is no easier or safer way of controlling hemorrhage from this source than by plugging the foramen—the operator will find it helpful to chisel the small bony eminence that lies just lateral to the foramen ovale. This bony process may be a tiny spicule, a dome-like process, or a ridge. By chiseling it away at once the foramen ovale is exposed to view and this is of great assistance in the presence of a deep temporal fossa. This process is also a sure guide to the location of the foramen, the site of which must be determined before one knows where to look for the cleavage between the dura and the ganglion.

Again, the facility with which the dura may be separated from the ganglion sheath varies greatly. It seems to me sometimes as though there had been a basilar meningitis at some time which not only bound these structures firmly together but extended to the arachnoid and root. Instead of the root lying freely in the subarachnoid space with its several fasciculi easily separated one from the other, arachnoid and fasciculi are more or less fused together and the tissues vascularized, as they are not in the average case.

As the technic prescribes, the operator begins at the foramen ovale to uncover the ganglion and continues as far forward as the point where the maxillary division is given off, and then inward until he can see the pulsating bluish arachnoid, beneath which the sensory root lies. This is the goal. Once the



Fig 4—Area of anesthesia five days after section of the ophthalmic portion of the sensory root in a patient with pain limited to the ophthalmic division.

smallest area of ganglion is exposed I inject a 1 per cent solution of procaine hydrochloride and the ether is discontinued. From conversations and consultations with many patients I have long been convinced that the patient prefers a general anesthetic and in the ether is discontinued at this time the patient is conscious when the wound is closed and has been spared the apprehension of pain which by virtue of years of suffering these patients dread so greatly. I think I know the psychology of the tic patient from every angle.

⁸ Grant F C M J & Rec 121:206 (Feb 15) 1923.
⁹ Frazier C H and Gardner W J Surg Gynec Obst 47:3 (July) 1928.

1 Plessner W Ueber Trigeminuserkrankung infolge von Trichlorathylensvergiftung Klin Wchnscr 53 25 (Jan 3) 1916
2 Joachumoglu G Die Pharmakologie des Trichlorathylens (Chloräthyl) Kahlbaum Klin Wchnscr 58 147 1921

Following the advice of Oppenheim, Plessner began the use of the drug in the treatment of trigeminal neuralgia, using the inhalation method. After many clinical trials, he came to the conclusion that from 3 to 60 drops could be used three times a day by inhalation without toxic effects, and that from 20 to 30 drops inhaled three times a day would be sufficient to produce complete relief.

In 1916, Plessner³ reported fourteen cases of trigeminal neuralgia treated with trichlorethylene. Of these fourteen cases, twelve were completely relieved and two were unaffected. This first series gave the remarkable result of 85 per cent cured, and it appeared as if a medical specific had been reached for trigeminal neuralgia. However, the later reports of cases did not measure up to the expectations of Plessner. Since the original paper, 163 additional cases of trigeminal neuralgia treated with this drug have been reported, 15 of which are included in the present paper. With Plessner's original cases, the total proportion of complete relief is 25 per cent. Exclusive of his report, the total proportion of complete relief is 15 per cent. As the proportion of complete relief reported by Plessner has not been obtained by other investigators, probably 15 per cent more nearly represents the actual facts. Approximately a further 52 per cent have had partial relief from pain.

From this statistical study it may readily be seen that trichlorethylene, though not giving the original spectacular result, is an extremely valuable adjunct in the treatment of trigeminal neuralgia, provided one is cognizant of its limitations. In addition to these patients with complete relief of pain (15 per cent), this drug has proved quite valuable in the amelioration of symptoms. In the reported cases 51 per cent have had their attacks diminished as to both intensity and frequency. Many of these patients have preferred these occasional mild attacks rather than undergo the even small risk of surgery or have the discomforting effects of anesthesia. In the two included cases in which pain was relieved, one patient had attacks four or five times a day. After two weeks of trichlorethylene therapy, the attacks of pain occurred at intervals of two weeks and were of such mild character that the patient preferred this pain to the anesthesia that resulted from her former alcohol injections. The other patient, a public speaker, developed such severe attacks during his orations that he was frequently forced to stop. After three weeks of trichlorethylene therapy, his attacks became so mild that even if they occurred during a speech he was able to continue. In addition, the frequency of the attacks was greatly lessened.

The question of corneal anesthesia has brought up numerous diversified opinions. Hildsheimer⁴ obtained corneal anesthesia in the majority of cases of non-trigeminal neuralgia, and for this reason recommended the drug in eye diseases. Rohrschneider did not obtain any corneal anesthesia, while Plessner in his original report obtained anesthesia in two out of his four cases. Blumenthal⁵ believed that this drug could be used in vasomotor disturbances of the face, and in vasomotor rhinitis. It was his opinion that the drug acted directly

on the sympathetic fibers, and that the cure was dependent on the presence of sympathetic fibers.

For the treatment of trigeminal neuralgia, the drug should be inhaled three or four times a day, from 20 to 25 drops being placed on a piece of gauze. The inhalation should be continued until the odor has entirely disappeared. This should be carried out over a period of a month to six weeks before its use is discontinued. The drug occasionally produces vertigo, sleep and drowsiness, and therefore it is well to take the inhalation in a recumbent position. After the pain is relieved, it is not necessary to continue the inhalation of the drug daily. As a prophylactic measure, it is extremely wise to inhale this drug every two or three months for a period of three consecutive days. Occasionally the patient may complain of a tingling sensation in the extremities which, however, passes off rapidly. Oljenick⁶ reported a man who began to shriek and sing following inhalation. The best results have been reported in cases of short duration and those involving the mandibular division. Seelert⁷ was of the opinion that trichlorethylene should be given by mouth in gelatin capsules in a dosage of 0.25 Gm. two or three times a day. Bendzulla⁸ believed that its therapeutic

Cases Treated With Trichlorethylene

Author	Num ber Treated	Completely Relieved		Partially Relieved		Unaf- fected
		Num ber	Per Cent	Num ber	Per Cent	
Plessner W. Klin. Wehnschr. 53: 25 (Jan 3) 1916. Monatschr. f. Psychiat. u. Neurol. 39: 129 1916. Klin. Wehnschr. 53: 614 (May 8) 1916.	25	14	56	0	0	2
Kramer Franz. Klin. Wehnschr. 58: 149 1921.	58	7	11.9	39	66.3	12
Magunna Kurt. Klin. Wehnschr. 1: 618 (March 25) 1922.	20	5	25	6	30	9
Seelert I. Klin. Wehnschr. 1: 222a (Nov 4) 1922.	10	1	10	14	70	4
Oljenick I. Neurotherapie. Bijblad der Psychiat. en Neurol. Bl. 6: 1 1924.	20	3	15	14	70	3
De Busseher J. de neurol. et de psychiat. 20: 97 (Feb.) 1929.	31	6	19	17	55	18
Glaser M. A. Present paper.	15	2	13.3	2	13.3	11
Total number of cases treated						177
Percentage of cases completely relieved including Plessner's						25
Percentage of cases completely relieved excluding Plessner's						15
Percentage of cases partially relieved including Plessner's						44
Percentage of cases partially relieved excluding Plessner's						51

results were obtained more efficiently and more rapidly by inhalation than if given by mouth.

In the original cases reported by Plessner, wherein the toxic effects were noted, trigeminal anesthesia was present. It was this one point of trigeminal anesthesia that led to the use of this drug in the treatment of trigeminal neuralgia. In contradistinction to these original observations, none of these patients inhaling this drug developed any trigeminal anesthesia, even if the pain was relieved. The question of the corneal reflex is still debated. In the fifteen cases reported in this paper no anesthesia was present, nor was the corneal reflex diminished. This was true for the two patients cured and the two relieved as well as for those that were entirely unaffected. Had this drug produced complete bilateral anesthesia of the trigeminal distribution its value for the cure of trigeminal neuralgia would

³ Plessner W. Die Erkrankungen des Trigemini durch Trichlorethylengift. Monatschr. f. Psychiat. u. Neurol. 39: 129 1916. Vorläufige Mitteilung über Behandlung versuche der Trigeminalneuralgie mit Trichlorethylene. Klin. Wehnschr. 53: 614 (May 8) 1916. Über Behandlungversuche der Trigeminalneuralgie mit Trichlorethylene. Monatschr. f. Psychiat. u. Neurol. 39: 129 1916.
⁴ Hildsheimer S. Ueber die Wirkung des Chloralhydrats (Kahlbaum) auf die normale und entzündlich veränderte Hornhaut des Menschen. Deutsche med. Wehnschr. 17: 248-249 1911.
⁵ Blumenthal Fritz. Ueber Chloralhydrat. Deutsche med. Wehnschr. 50: 140 (Feb. 1) 1924.

⁶ Oljenick I. Treatment of Trigeminal Neuralgia by Chloralhydrate. Neuroherapie. Bijblad der Psychiat. en Neurol. Bl. 6: 1 1924. Trigeminalneuralgie en andere aandoeningen van het Trigeminale Ganglion. Ned. Tijdschr. Geneesk. 51: 512 (Feb. 5) 1921.
⁷ Seelert I. In meine Anwendung des Chloralhydrats bei Trigeminalneuralgie. Klin. Wehnschr. 1: 222a (Nov. 4) 1922.
⁸ Bendzulla. Die Behandlung der Trigeminalneuralgie mit Chloralhydrat. Dtsch. med. Wochenschr. 37: 21 (Jan. 2) 1911.

have been questionable. Such a resulting bilateral anesthesia would have been more discomforting than the original disease, and therefore surgical measures wherein only partial anesthesia of the trigeminal tract could be accomplished would have been the method of choice. As the situation exists at present, a patient cured of trigeminal neuralgia by the use of trichlorethylene has a greater advantage over a surgical cure in that he is free from pain without the resulting anesthesia. The discrepancy existing between the anesthesia occurring in the original workers reported by Plessner and the relief of pain without demonstrable facial anesthesia has led many of the writers, such as von Kalinowski⁹ and Bab, to raise the question whether or not trichlorethylene was the drug responsible for the anesthesia and toxic symptoms reported by Plessner. It has also brought up the point whether trichlorethylene is a specific for the trigeminal tract or whether it acts as a narcotic, depressing the cortex to painful stimuli. These questions are rightly raised. It certainly appears as if the present trichlorethylene is not the drug responsible for the toxic symptoms in Plessner's workers. How it acts on the trigeminal tract is still an unsolved problem.

I have had occasion to try the drug in atypical facial neuralgia and in sphenopalatine and allergic neuralgia, without obtaining any relief from pain. These observations do not favor the cerebral depressant theory.

Trigeminal neuralgia was first recognized by Avicenna in A. D. 1000 and was later described by Schlichtung in 1748. Nicholas Andre, in 1756 for the first time called it "tic douloureux." Fothergill in 1773, was the first to describe the disease accurately, and little can be added to his original description. The diagnosis of trigeminal neuralgia is usually clear cut. The disease consists of superficial, sharp acute, lancinating pain, almost always unilateral and confined to the distribution of the trigeminal tract. This pain usually lasts two or three seconds but occasionally is prolonged to even half an hour with absolute freedom of the severe pain between attacks, with occasionally a feeling of discomfort or soreness in the interim. Frequently there are trigger zones, these being areas which, on being touched, will set off the paroxysm of pain. The pain is never cured spontaneously nor can it be relieved by the usual symptomatic treatment. However, there are frequently remissions when the pain is absent for from several months to several years only to return with more intensity. The etiology of trigeminal neuralgia is unknown, and the attacks may be precipitated by local contact or may occur spontaneously.

A disease which closely simulates trigeminal neuralgia, but which on careful analysis¹⁰ demonstrated many diagnostic differences, is that of "atypical" facial neuralgia. Before this disease was first recognized, the pain was considered that of the trigeminal neuralgia and the patients were subjected to the usual surgical procedure of the neuralgia patients. However, in spite of the anesthetics so obtained, the patients still retained their pain. For want of a better term, this pain was called "atypical facial neuralgia." The pain in this disease is deep seated, deep in the bone, or deep in the muscle, continuous and of tearing, bursting nagging, gnawing nature. The patients have great difficulty in describing the character of the pain, and in a series of

143 cases, 73 different adjectives were used. The pain goes beyond the bounds of the trigeminal tract, extending into the cervical region and occasionally down the arm. It is bilateral in about one third of the cases and has associated with the pain sympathetic phenomena such as lacrimation, edema of the face, congestion of the conjunctiva and flushing of the face. The pain is essentially persistent and continuous. There are, however, periods of greater severity. During the first two or three hours of this aggravated period, the pain greatly increases until a height is reached, after which the intensity slowly subsides until the end of the third day or so, when the chronic phase is resumed. There are many variations from this typical history. There may even be remissions lasting from two to three years.

In addition to atypical facial neuralgia, sphenopalatine neuralgia, neuralgia of the seventh, ninth and tenth cranial nerves, dental pulp stones or allergic headache should not be confused with true trigeminal neuralgia.

The treatment of trigeminal neuralgia is one of surgical advances and progress. It carries with it the names of Rose, Hartley, Liffany, Krause, Horsley, Doven, Spiller, Frazier, Cushing, Dandy and Adson. The first surgery was the removal of the gasserian ganglion by Rose in 1891. He also suggested preservation of the ophthalmic division. Horsley, in 1891, attempted to cut the sensory root of the trigeminal nerve without success. In 1893 the Hartley-Krause operation was introduced. In 1901 Frazier and Spiller reported the first successful intracranial section of the sensory root. In 1896 Liffany suggested the partial section of the gasserian ganglion, and also the saving of the motor root. In 1917 Frazier, after morphologic studies of the gasserian ganglion, and at the suggestion of Spiller carried out the subtotal section of the sensory root. In 1919 Frazier found that it was possible to preserve the motor root. In 1922 Adson suggested the technique of preserving the motor root by exposure from the medial side by gentle traction and elevation of the sensory root. The introduction of the subtotal section eliminated one of the horrifying sequelae that frequently followed the complete section of the sensory root. By the preservation of the ophthalmic division, corneal ulcer could not occur, the preservation of the motor root maintained the motor supply to the muscles of mastication, prevented atrophy of these muscles, and if possible chance bilateral trigeminal neuralgia should occur muscular paralysis need not be feared.

In 1929 Dandy introduced section of the sensory root at the pons and considered this superior to the temporal route. He claimed many advantages by this section from that of the temporal route—namely the preservation of the motor root, the absence of postoperative corneal anesthesia, the larger area of remaining sensation, and the retention of the sense of touch. These advantages are disputed by Gotten, Fay and Grant.¹¹

Alcohol injection of the branches of the trigeminal nerve was carried out by Schlosser in 1903, by Levi and Brudown in 1906 and by Patrick in 1907. Harris in 1912 injected the gasserian ganglion. Treatment by alcohol is only palliative and is of value in patients who are poor operative risks, or in those who are being prepared for the radical procedure. The average duration of relief is about nine months, but occasionally relief is for two to three years.

9 Von Kalinowsky, L. Bemerkungen zur Therapie mit Chlorälen (Trichloräthylen). Ztschr. f. Augenheilk. 63: 367 (Dec.) 1927.
10 Glaser, M. A. Atypical Neuralgia So-Called. Arch. Neurol. & Psychiat. 20: 537-558 (Sept.) 1928.

11 Gotten, Nicholas, Fay, Temple and Grant, F. C. A Case of Section of the Trigeminal and Glossopharyngeal Nerves Through the Posterior Fossa (Dandy Method). Arch. Neurol. & Psychiat. 23: 393 (Feb.) 1930.

When the diagnosis of trigeminal neuralgia is definitely ascertained, it would be prudent to try trichlorethylene with the hope that the patient may be among the small percentage so ideally relieved. If this method fails to relieve pain, alcohol injection or surgery should be carried out. It might be well to explain the palliative action of alcohol and the permanence of the surgical treatment. As the operative mortality is only 0.37 per cent, surgery may be safely advised. It is usually found that the patients will first choose the alcohol injection and then with the recurrence of the pain resort to the operative treatment.

REPORT OF CASES

CASE 1—R K, a man aged 56, complained of pain in the left upper and lower gums. He had had all teeth extracted. He had had hypertension with cardiac hypertrophy and angina pectoris for the past several years. About seven months before, he developed attacks of shooting pains in his upper and lower jaws, confined particularly to the inside of his mouth. For several months these attacks had occurred about twenty times a day. They were usually brought on by talking occasionally coming on without any cause. Often rubbing the gums relieved them. The attacks were not of great severity and did not have the appearance of the extremely severe usual trigeminal pain. Roentgenograms of the jaws are entirely negative. Two weeks' therapy with trichlorethylene proved of no avail. Because this pain did not particularly incapacitate the patient, it was deemed wise to block the mandibular and maxillary nerve with procaine hydrochloride. For six hours following this block he was entirely free from pain. The numbness, however, caused him such disturbance that he stated that the pain was much less annoying. For this reason an alcohol injection was not carried out.

This is an extremely unusual case of trigeminal neuralgia and differs greatly from the usual type of cases. However, with this marked relief of pain following nerve block, it is apparent that the diagnosis of trigeminal neuralgia must be made.

CASE 2—H C R, a man, aged 71, complained of right sided facial pain. His teeth had been extracted. About nine years before I saw him, the patient began to have pain in a molar tooth in the right lower jaw. He had several teeth extracted without relief. This pain was of a shooting, sharp, lightning-like character and confined to the right lower jaw. It was brought on by talking, eating or contact. The attacks lasted about one minute and he was free from pain in the intervals. The attacks occurred twenty or thirty times a day. He had eight previous alcohol injections in another clinic. Trichlorethylene did not relieve the pain. Alcohol injection relieved the pain.

CASE 3—T H, a man aged 73 complained of right supra-orbital pain. His family history and past history were essentially negative. Four years before, he developed severe supra-orbital pain, which occurred in attacks lasting a few seconds and were of extreme severity. The pain was of a shooting lightning, tearing character and occurred every few minutes. Between attacks he was entirely free from pain. Trichlorethylene did not prove of value. Evulsion of the supra-orbital nerve relieved the pain.

CASE 4—N T, a woman, aged 51 had right sided facial pain. All her teeth had been extracted. For the past seven years she had had pain on the right side of her face involving the third division of the trigeminal nerve. This pain occurred in attacks lasting two or three minutes and was of a sharp lightning lancing character. Between the attacks she was entirely free from pain. She had had numerous alcohol injections and finally it appeared as if injections would not relieve her pain. Trichlorethylene therapy was tried but it did not relieve the pain. Alcohol injection of the third division was attempted without results. A subtotal section of the trigeminal nerve was performed with a relief of symptoms.

CASE 5—J B, a man aged 78 complained of left sided facial pain. His family history and past history were essen-

tially negative. About fifteen years before he developed severe pain in all divisions of the left trigeminal nerve. During varying periods of time he was pain-free. About eighteen months before the pain returned with extreme severity. It was of a sharp knifelike character, occurring in attacks from thirty to forty times a day and lasting two or three seconds, he was free from pain between attacks. The attacks were so severe that the patient could scarcely eat, was confined to bed and was slowly losing weight. He had six alcohol injections in other clinics the last two proving unsatisfactory. Treatment with trichlorethylene proved of no value. Alcohol injection did not prove satisfactory. He refused surgery.

CASE 6—H K S, a woman aged 78, complained of pain on the right side of the face. About twenty years before the patient noticed the onset of attacks of acute, lancinating pain in the right second and third divisions of her face. These attacks lasted about half a minute and were of extreme severity. During the interim she was entirely free from pain. For the past two years the attacks had occurred in increasing frequency and in the past six months occurred from ten to twenty times a day. There was a definite trigger zone along the border of the nose and the attacks were accentuated by touch or by eating. Treatment with trichlorethylene was tried but proved of no value. Alcohol injection of the second and third divisions relieved the pain.

CASE 7—A L S, a woman, aged 70 complained of left sided facial pain. She had previously had chiropractic and electrical treatment. For the past six years the patient had had attacks of severe sharp, shooting pain on the left side of her face, involving the second and third divisions. In the past year or so this pain occurred about fifteen times a day and in the interim she was entirely pain-free. Alcohol injections relieved her for the past six months. Trichlorethylene did not relieve her pain. An alcohol injection of the second and third divisions proved satisfactory.

CASE 8—F L, a woman, aged 77 complained of pain on the right side of the face. On account of the extreme pain the patient had become addicted to the use of morphine. By sheer will power following the relief of her pain she controlled this habit and for the past eight months had not used any morphine. She had had pain in the face for about forty years the attacks occurring during three or four consecutive years, and occasionally being absent for several years. About nine months before, the pain became extremely severe and occurred practically every day. The pain was gnawing, shooting and knifelike in character, it occurred in attacks lasting about half a minute and brought on by contact or eating. They involved the right second and third divisions. Treatment with trichlorethylene proved of no avail. Alcohol injection of the second division gave relief that has lasted fourteen months, whereas the relief in the third division lasted eight months. The latter was reinjected with the relief of pain.

Morphine addiction in trigeminal neuralgia is a rarity. Frazier has never observed this in any of his series.

CASE 9—A B, a man aged 76 suffered from pain in the face. All his teeth had been extracted. He had had attacks of severe, lancinating pain on the left side of his face for the last thirty years. During this period he had had an absence of pain frequently as long as one year. He would then have a period of severe attacks lasting a week and he would then after be again pain-free. In the last year he had two of the severe periods, one in which the pain was of extreme severity lasted two weeks. He could not sleep nor eat the attacks occurring every five minutes. At the end of the second week period he again had a period during which he was free from pain. About five weeks before he developed another period of extreme pain lasting longer than any he had had. The pain involved the third division on the left side of his face and was of a sharp knifelike character. It occurred spontaneously. Treatment with trichlorethylene proved of no avail. About a month after stopping the use of trichlorethylene his severe attacks subsided. He refused nerve injection or surgery.

CASE 10—M M, a man aged 52 complained of pain in the left side of his face. His family history and past history were essentially negative. For the past several years he

had had attacks of pain involving the left side of his face. These attacks were extremely severe and of a sharp, lancinating character, they would last a few seconds. There were periods lasting from six months to two years in which he did not have these acute attacks, and then he would have a period for several weeks in which the attacks were practically continuous. During these periods he could scarcely sleep and could not eat. He had had no treatment for this neuralgia other than sedatives. He was placed under trichlorethylene therapy without relief of symptoms. Alcohol injection was performed with complete relief.

CASE 11—E V R, a woman, aged 60, complained of right sided facial pain. She had previously had chiropractic and electrical treatment, also, her teeth had been extracted. Off and on for the past year the patient had had attacks of sharp, shooting, knife-like pain situated in the area of the right second division. About eight months before she had an alcohol injection (in another clinic) without relief of pain. Trichlorethylene therapy entirely relieved her pain after three days' administration. Repeated examination of the face failed to reveal any anesthesia; the corneal reflexes were not diminished, nor did the patient complain of any facial numbness.

CASE 12—A S, a man, aged 44, complained of pain in the face. He had had numerous teeth extracted and had had a sinus operation. For the past seven years he had had acute attacks of pain involving the right third division. These attacks would last two or three seconds and were of extreme severity. There were several months wherein he had periods during which the attacks would not occur; then they would occur consecutively in a week or so as often as fifty times a day. He had had previous alcohol injection at another clinic, with the relief of pain lasting from six to eighteen months. Trichlorethylene therapy was carried out without relief. Alcohol injection was successfully performed with relief of symptoms.

CASE 13—C M, a woman, aged 59, complained of pain in the right side of the face. She had had her teeth extracted and had had chiropractic treatment and electrical therapy. The first attack of pain was noticed seventeen years before. She was then free from pain for a period of four years. Alcohol injections from time to time relieved her pain for eighteen months, but the last injection gave her relief for only one month. This pain involved the third division slightly, but was more marked on the second division. Trichlorethylene therapy reduced her attacks, both in severity and in number. She preferred this relief of pain to a total relief which would involve the discomfort of anesthesia.

CASE 14—E B, a woman, aged 70, complained of pain on the right and left sides of the face. She had had all her teeth extracted and had had three sinus operations. Thirteen years before she developed pain in the right third divisions, five years before she developed attacks of acute, lancinating pain in the left second division, and that in the right only occurred occasionally. For the past eight months the pain had been most severe in the second and third divisions of the right side, with only occasional twinges in the left second division. For the past month the attacks had been extremely severe and had occurred from four to five times a day. After one week of trichlorethylene therapy, the pain was completely relieved.

This is an unusual case in that the patient had bilateral trigeminal neuralgia. Operation performed in this case would have been extremely destructive and would have necessitated loss of sensation to both sides of the face.

CASE 15—J M, a man aged 55, complained of pain in the face. He had had several teeth extracted. About a year before, the patient developed pain in the left second and third divisions. These pains were of a sharp lancinating character and of late had occurred three or four times a day, particularly when he talked. He had a definite trigger zone on the side of the nose. Trichlorethylene therapy relieved the pain so that he could continue with his work. The attacks were reduced in number and severity.

CONCLUSIONS

1 The result of a statistical summary shows that approximately 15 per cent of the reported cases of trigeminal neuralgia treated by trichlorethylene therapy were completely relieved of symptoms.

2 The percentage of partial relief varies with the different investigators. In the present series, 13.3 per cent were partially relieved, while in Secler's series 74 per cent were partially relieved.

3 Trichlorethylene therapy is ideal in the treatment of trigeminal neuralgia in those cases in which the drug is effective, as the pain is relieved without a resulting anesthesia.

4 Trichlorethylene is not toxic.

5 The action of trichlorethylene in the relief of trigeminal neuralgia is unknown.

6 It is doubtful that trichlorethylene is the original drug responsible for the toxic symptoms and the anesthesia in Plessner's industrial workers.

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DETERMINATION OF THE VALUE
OF ANTISEPTICS*

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It may safely be inferred that the use of antiseptics antedates the earliest existing record of mankind. The preservation of foods in times of plenty for the periods of scarcity was a lesson learned early by prehistoric races. They preserved their foods by dyeing, smoking, salting or spicing.

Spices, volatile oils, and balsams were early used by priests and healers in the care of wounds, although antiseptics was undreamed of. Later certain preparations of mercury and other heavy metals came into common usage. Distilled liquors, potions made from herbs, and even the cautery were listed in the armamentarium of our forebears devoted to the healing of wounds.

Throughout the ages, and until the work of Lister in the latter third of the nineteenth century, the term "antiseptic," however, was associated exclusively with the preservation of foodstuffs. Following his epoch-making discoveries, new and different terms with distinct meanings came into being. Today their use is largely academic. The average physician and surgeon use interchangeably, "antiseptic," "germicide," "disinfectant," and "bacteriostatic."

However, a definition of antiseptics that is most widely accepted at present, and the one recognized by the Department of Agriculture in Washington, was formulated by Reddish.¹ It is as follows:

Antiseptics are substances which, when applied to microorganisms, will render them innocuous either by actually killing them or preventing their growth according to the character of the preparation or the method of application.

From time to time, new preparations with variable bactericidal properties have been produced. This gave rise to a need for evaluating their comparative efficiency. Of the many methods of evaluation suggested, three with modifications are widely accepted today. Of these

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¹ Reddish, G. F. Antiseptics. J. Am. Pharm. A. 16: 501-502, 1927.

the Hygienic Laboratory² and the Rideal-Walker³ procedures are in most common use. The *Lancet*⁴ method is less widely used, especially in this country.

The general principles of the foregoing methods, all devised about two decades ago, are essentially similar. They have individual and common faults, which have become especially evident within the past few years. It becomes obvious to any one working on the subject of antiseptics, from either the practical or the theoretical point of view, that changes in the present technic of evaluating antiseptics are urgent.

The disinfectants in common use at the time these methods were developed were closely allied chemically. They were phenols or derivatives of phenol having, with slight modification, essentially the same properties. Hence it was possible, both theoretically and practically, to compare directly one with the other, using the same single organism for the test. One of the inherent weaknesses of these methods of comparison, the use of a single organism, was less serious at the time of their inception than it is now. Then there was a great need for disinfectants to control epidemics, especially of typhoid. Hence the bacillus of this disease was selected as the test organism for the work. If the variety and cultural characteristics of the bacteria responsible for the infections workers were then seeking to control had been appreciated, some other organism more hardy than *Bacillus typhosus* probably would have been selected as the test organism.

It should be remembered that the methods of testing disinfectants were devised at that time for a purpose quite different from our present needs. The disinfection of inanimate objects contaminated with disease-producing germs was the primary need for the different preparations. Today we are largely concerned with the sterilization of wounds, or the preparation of skin surfaces as germ free as is possible to produce without destruction of tissue. Briefly, then the original methods were devised to compare disinfectants, while our need today is for a system for comparing antiseptics intended for use on living tissues.

The antiseptics of today are no longer simple phenol preparations but include a diverse assortment of alcoholic preparations, heavy metals, complex organic derivatives, dyes and halogens. Their individual bactericidal properties differ in various ways, and their action in clinical dilution depends on a complex group of factors, chief of which might be properly considered the organism with which they come into contact.

In a comparative analysis of the efficacy of antiseptics there are many factors, theoretical as well as practical, to be considered. Of prime importance is the resistance of the different bacteria to the killing action of the preparation in a dilution suitable for clinical use. One antiseptic preparation may kill *B. typhosus* in high dilution and be totally innocuous to staphylococci in the same concentration, as determined by the Rideal-Walker or the Hygienic Laboratory methods, and precisely the reverse may be true as well.⁵ Such information, in terms of the phenol coefficient describing the efficiency of the antiseptic, is not strictly in keeping with clinical results. Hydrogen peroxide for instance, readily killed *Bacillus typhosus* spared *Bacillus subtilis* (a spore former), was moderately efficient in inhibiting

Bacillus pyocyaneus, and was a slighter better bacteriostatic agent for *Staphylococcus aureus*. The statement, therefore, that hydrogen dioxide (which was selected at random⁶) is an efficient antiseptic because it destroys *Bacillus typhosus* expeditiously is, as a matter of fact misleading. It is efficient according to the technic used for *Bacillus typhosus* only. Such an example, however, is illustrative of the situation existing today in connection with antiseptics in general. The resistance of different organisms, representative of bacterial groups and under a variety of conditions to a new antiseptic is usually not even determined before it is put on the market. Furthermore, it is evident that bacteria are not free and isolated in a wound but are intimately associated with the tissues, invading them and often freely intermixed with debris so that they are not readily accessible to the action of the antiseptics. Certain types of bacteria (spore formers) possess a unique protective mechanism which disappears under favorable conditions but retains for the organism its vitality in the presence of deleterious agents. Organisms may develop a fastness to different antiseptics so that they may even grow in the presence of the product which formerly killed them.⁷ There are other preparations that are rendered practically inert on contact with organic matter, so that their action is expended chemically in reacting with the tissues to a greater extent than with the organisms. To overcome these factors without sacrificing the clinical value of the product is still an unsolved problem. However, progress is resulting from the research directed at attaining a reliable antiseptic, germicidal in clinical dilutions, nontoxic, nonirritating, noncorrosive and rapidly efficient.

It is highly desirable that a standard technic for determining the efficiency of an antiseptic under a variety of conditions and using several organisms typifying as nearly as possible the several classes of invaders be adopted. Reddish⁸ says

Phenol coefficients could still be used by the manufacturer for controlling the uniformity of his products, but the dilutions of these products which are specified for actual use must be based on definite tests against the organism it is desired to kill. Antiseptics for use on the skin and mucous membranes and in cuts, abrasions, wounds, etc. should be tested against pyogenic organisms such as *Staphylococcus aureus* and *Streptococcus hemolyticus*. If a disinfectant is recommended for general use, the manufacturer must be sure that the dilutions specified for his product will kill all of the nonsporing organisms which cause diseases of an epidemiologic nature. If he so desires he may recommend only one dilution for general use but he must be certain by actual tests that this dilution will kill those organisms that are dangerous from an epidemiological standpoint. Further, since liquid antiseptics are ordinarily used on the animal and human body are intended to prevent infection by killing pathogenic organisms, especially the pyogenic group or to aid in curing such infections if they have already started, the organisms used for testing their suitability for this purpose should be the ones that are actually met with in practice. It is obvious that the ability of an antiseptic to kill *Bacillus typhosus* the test organism used in our standard phenol coefficient tests is of little value in determining its germicidal efficiency against the organisms causing infections. A phenol coefficient of an antiseptic is naturally of little value to the medical profession and the layman in making a choice from the large number of germicides available.

² Anderson J. F. and McClintic T. B. A Method for the Bacteriological Standardization of Disinfectants. *J. Infect. Dis.* 5: 126, 1911.
³ Rideal S. and Walker J. T. A. Standardized Disinfectants. *J. Roy. San. Inst.* 24: 424, 1903.
⁴ Lancet Commission Report on the Standardization of Disinfectants. *Lancet* 177: 4493-4499, 4500, 1909.
⁵ Reddish G. I. Examination of Disinfectants. *Am. J. Pub. Health* 1: 320 (April) 1927.

⁶ Allen A. W. A Comparative Study of the Bactericidal Values of Twenty One Commonly Used Antiseptics. *Arch. Surg.* 19: 512 (Nov.) 1920.

⁷ Meader P. D. and Fere W. A. Drawings in the Pathology to the Resistance of Certain Organisms Toward Formalin. *Chem. J. Infect. Dis.* 2: 2 (Sept.) 1917.

⁸ Reddish G. I. Method of Testing Antiseptics. *J. Lab. & Clin. Med.* 14: 69 (April) 1924.

Among the chief objections to the present procedures, the following may be mentioned. In the method of the Hygienic Laboratory, the broth is too weak, and the hydrogen ion concentration is too high to support a vigorous growth. *Bacillus typhosus*, the test organism, may lose its resistance when grown in these mediums. There is too wide a range of latitude between the phenol dilution and the resistance of *Bacillus typhosus* to it, as determined by the time element. In the original protocol it is stated that the test is applicable only to disinfectants chemically related to phenol which are to be used against organisms reacting similarly to the manner in which typhoid reacts and which are destructible within the time and temperature limits of this test. The usual understanding of the term "phenol coefficient" among manufacturers as well as laymen is that it indicates that the disinfectant is a certain number of times stronger than phenol against all organisms.

In addition to several of the foregoing objections, the Rideal-Walker test has two others of considerable importance. The effectiveness of many disinfectants does not change uniformly with the concentration, so that determination of the coefficient differs according to the concentrations of the disinfectant used. By definition the Rideal-Walker coefficient expresses "strength or efficiency of disinfectants under test" which, in reality, indicates relative strength of disinfectants which will kill *Bacillus typhosus*, as compared with the dilution of phenol, which would kill the same organism under conditions as specified in the test.⁹

From the practical angle, many inadequacies are evident. No notice is taken of the practical application of the antiseptic, which is, in the final analysis, the sole reason for the existence of methods for testing it. The laboratory standard may be summed up in two words: killing time. The clinical applications are not considered. An antiseptic may be suitable for use on the skin, yet unsuited for the eye. Tissue reaction is neglected. A sloughing area needs different treatment than a clean wound. Certain preparations are used as irrigants, others for wet dressings or transient applications. No attention is given to the fact that one of many or even several different organisms may be present against which the antiseptic may have no bacteriostatic action whatever. As far as laboratory procedure is concerned, therefore, with emphasis placed on killing time and the use of an irrelevant weak organism, the practitioner must rely on the trial and error method of evaluation of antiseptics for practical use. Unfortunately, however, there seems to be a great reticence about reporting the unfavorable results, so that the literature contains an unjustifiable preponderance of favorable reports.

Other comparative methods of testing have been suggested by workers from time to time, for a variety of purposes. While these methods may have been open to criticism, especially by those who adhere to the time-honored procedures, the evidence points overwhelmingly to the urgent need for a modern, more comprehensive technic for the comparative rating of antiseptics. The following references support this view. Tinker⁹ and Sutton¹⁰ have collected isolated reports from the literature showing the incidence of nonsterile skin cultures both deep and superficial, following various preoperative skin preparations. It has been suggested that cultures of the skin scrapings be

used to determine the antiseptic efficiency. Weyrauch¹¹ made a comparative study of the phenol coefficient determination of several different antiseptics, using the same technic (the Rideal-Walker) with *Bacillus typhosus* and *Staphylococcus aureus*. The phenol coefficient determination based on the use of *Staphylococcus aureus* differed widely with each antiseptic from the same rating with the use of *Bacillus typhosus*. Reddish¹² and Weyrauch¹¹ and many others have urged the use of several different organisms in any procedure to be accepted. Hailer¹³ showed the variation in the resistance of several different organisms to the bactericidal action of germicides when they were tested by the usual method and when they were suspended on threads of cotton and silk which had been immersed in cultures, in the antiseptic solution. By this method he emphasized the necessity of determining penetrability of the antiseptic. Himebaugh¹⁴ has devised several ingenious experiments to determine irritability of antiseptics to tissue, a feature that should be carefully considered in evaluating antiseptics. Wright and Allen¹⁵ in recent papers have shown the wide variation in bactericidal properties of several antiseptics in the presence of massive infection and superficial contamination. Branham¹⁶ and others demonstrated the fact that antiseptics inhibit the fermentation of sugar by yeast and have urged that the inhibition of the yeast function be used as a guide to the bactericidal action of the different preparations. Richet¹⁷ used the inhibition of lactic acid formation as an index of bacteriostatic action. Thus it is evident that there are many who regard a change in the present system as urgent.

In addition, the following purely practical ideas are offered for consideration.

Manufacturers cannot be held entirely responsible for the making of exorbitant claims for antiseptics which they produce if the standards of evaluation permissible are the methods of two decades ago and the antiseptics of today. The innocent victims of this unfortunate situation are (a) the mass of the public, who have no choice but to believe what is stated plus what is inferred from the advertisements of these products, (b) physicians who are out of touch with the more critical scientific world and hence are in practically the same situation as the lay public in judging values of antiseptics, (c) even outstanding leaders in medicine and surgery who have not sufficient time nor equipment to carry on experimental work either in the laboratory or clinic, to determine for themselves the value of the antiseptics they may desire to use, they may be carried away by the names of a few of their colleagues, or institutions, or manufacturing chemists, whose temporary enthusiasm gives unwarranted support to new and inadequately tested products.

On the other hand, the physician or surgeon who uses the several available antiseptic products is often at fault.

- 9 Tinker M B and Sutton H B. Inefficiency of Most of the Commonly Used Skin Antiseptics. J A M A 87 1347 (Oct 23) 1928
- 10 Sutton H B. Inadequate Skin Preparation as a Cause of Postoperative Wound Infection. New York State J Med 28 129 (Feb) 1928
- 11 Weyrauch F. Comparative Tests of Disinfectants. Zentralbl f Bakteriol 103 123 (July 1) 1927
- 12 Reddish G F. (footnote 5). Resistance to Phenol of *Staphylococcus aureus* Am J Pub Health 16 534 (June) 1925. Determining Germicidal Efficiency of Disinfectants. Am J Pub Health 16 283 1926
- 13 Hailer E. Comparative Methods of Testing and Determination of the Values of Disinfecting Agents. Deutsche med. Wchnschr 47 1384 1921
- 14 Himebaugh L C. Personal communication to the authors
- 15 Wright I S. Effects of Mercurochrome 220 Soluble on the Growth of *Bacillus Pyocyaneus*. Arch Surg 15 958 (Dec) 1927. Allen A W and Wright I S. The Bactericidal Properties of the Solution S T 37 (Liquor Hexylresorcinolis 1 0000) ibid 17 834 839 (Nov) 1928. Allen (footnote 6)
- 16 Branham Sara E. An Improved Technic for the Comparison of Antiseptics by Yeast Fermentation. J Infect Dis 44 142 1929
- 17 Richet C. Experimental Research on Antiseptics. Medecine 1 719 721 (Sept) 1920

This application of the preparation. This may be the cause of the many unfavorable results noted in connection with the use of some of the antiseptics in common usage today. He must first understand the dynamic pathologic condition at which his medication is directed. Even with the understanding of the problem at hand he may and often does do more harm by medication of the wound than all the germs present would do under ordinary circumstances. Through the use of too strong or too often repeated application of the antiseptic he may destroy normal living and reparative tissues, thereby producing delayed healing, an ulcerating area, an unnecessary slough, or even systemic reactions following the absorption of the toxic products of the tissue degeneration. An agent which inhibits or kills the bacteria present in the wound, but which does not destroy tissue or interfere with the natural defensive body mechanisms, is, generally speaking, far more desirable than one which kills all the organisms present and at the same time accomplishes the destruction of the tissues with which it comes into contact.

It is felt, therefore, that more comprehensive tests are imperative to determine the antiseptic value of a preparation under several different conditions. It is of prime importance that more than one organism be used, as Novy¹⁸ pointed out some years ago. Especially should representatives of the pyogenic group be included, since antiseptics are most commonly directed against them. This point has been emphasized many times during the past ten years, and Reddish⁹ finally formulated a procedure embodying this thought. He reported a comprehensive procedure to the Laboratory Section of the American Public Health Association in 1926 as the culmination of several years' work. His method eliminated many of the objectionable features of the prevailing modifications of the Hygienic Laboratory method and combined their good qualities so that a "phenol coefficient" could be determined with the use of several different organisms, namely, *Bacillus typhosus*, *Staphylococcus aureus*, *Corynebacterium diphtheriae*, *Mycobacterium tuberculosis*, *Diplococcus pneumoniae* and *Streptococcus hemolyticus*. By employing these organisms it is possible to ascertain the action of an antiseptic on organisms typical of the different groups of nonsporulating pathogens. This method is, therefore, superior to the older methods in which only one bacterium was used, one now rarely encountered in the clinical application of antiseptics. This procedure should be used as the first step in the determination of the value of an antiseptic. It will weed out many worthless preparations.

However, there are certain essential characteristics which antiseptics should possess and on which this method and all preceding methods give no information, such as (1) the penetrability of the antiseptic, (2) the action of the antiseptic in the presence of serum, (3) the action of the antiseptic in the presence of massive infection, and (4) the action of the antiseptic on living tissue. These points are adequately estimated by the following methods of testing antiseptics.

In 1924 Himebaugh devised a new method for the testing of antiseptics and germicides, designated as the agar cup plate method. Through the cooperation and kindness of Dr. Himebaugh we were enabled to include his method⁹ in this paper, with several important modifications now published for the first time. After a tremendous amount of experimental work, involving many combinations of different percentages of agar,

added nutrient mediums and blood serum, Dr. Himebaugh believes the formula presented here is the one best suited for all round purposes of this test. The object was to visualize in the laboratory the results that might be obtained when an antiseptic or germicide is applied to open cuts and wounds. For the purpose of representing as nearly as it is possible in the laboratory the colloidal-like body fluids and tissues, standard beef extract agar was selected, containing from 10 to 50 per cent normal blood serum. Although there may be defects in the selection of the mediums it is believed that from the standpoint of food material, salts and blood serum the method is sufficiently accurate for the purpose of indicating the comparative value of antiseptics and germicides when applied to open cuts and wounds over short time periods as well as over long time periods of exposure. As the colloidal-like structure for the mediums, Himebaugh has found standard beef extract agar superior to gelatin. When the amount of blood serum used is 50 per cent by volume, the medium is double strength standard beef extract agar. From 1.5 to 2 per cent agar is capable of indicating to the greatest advantage differences in antiseptic and germicidal value. The test organism selected was a standardized culture of *Staphylococcus aureus*. The resistance of this organism to most germicidal agents is greater under laboratory conditions than that of most other non-spore-bearing pathogenic organisms. It is representative of the pus-producing type of organism encountered in open cuts and wounds.

The technic in running the test is as follows:¹⁰

Standard beef extract agar, 250 cc., in flasks is cooled to a point at which it will not cause coagulation of the blood serum. Blood serum is then added to make 10 per cent concentration. The flasks are immediately inoculated with a twenty-four hour broth culture of the test organism. The inoculation is made by first diluting the culture 1:20,000 and then adding 1 cc. of this dilution to the flasks of medium. Immediately after inoculation and mixing by careful rotating, 30 cc. of the inoculated mediums are then transferred to petri dishes. After the agar is allowed to cool and form a solid jelly, a disk having a diameter of 2 cm. is removed from the center of the petri dishes. The cup or depression thus formed is then sealed at the bottom with a few drops of liquid agar. Originally glass stoppers were used to produce the desired cup. This was found a bad practice, causing injury to the medium at the time the glass stopper is removed. A nickel-plated, specially sharpened cork borer, sterilized in a free flame, has been found most efficient in easily removing the disk from the center of the agar plate. After the medium is allowed to cool and form a solid jelly, 0.5 cc. of the antiseptic or disinfectant to be tested is placed in the cup at the center of the petri dish. If the antiseptic is to be applied for only a short-time period in practice the technic of the test is to remove the antiseptic by means of sterile filter paper after five, ten, fifteen or thirty minutes in the cup. If the method of application recommended indicates that the product would be in constant application with the tissues over a period of time, such as results in the application of wet dressings, antiseptic powders or ointments, the antiseptic or germicide is allowed to remain in the cup for a period of forty-eight hours. The petri dishes, after treatment with the antiseptic or after its removal from the cup or depression at the center are incubated for a period of forty-eight hours at a temperature of 37 C. for the purpose of securing growth of any organisms not inhibited by the antiseptic or germicide. The results are tabulated in distances from the cup showing no growth. A further test is then made to determine whether or not the action observed was inhibitive or germicidal. Small disks (0.1 cc.) are removed from the mediums at distances of 0.1 cm. each until the area where there is visible growth is reached. The disks are transferred to standard beef extract broth in sufficient volume to avoid any inhibitive action and

after breaking up in the mediums are incubated for a further period of forty-eight hours. The results are tabulated, indicating the distances from the cup where the germicidal action was evident from the fact that no growth of the test organism was obtained.

The results of the antiseptic or growth-inhibitive action are photographed or reproduced by photostat in order to preserve a visual indication of the antiseptic or growth-inhibitive action of the sample examined. It is also important to observe and take into consideration the action of the antiseptic or germicide on blood serum. The method as described can be constantly repeated on the same product without variation in results. An additional advantage of this method is the accuracy with which a portrayal of penetrating antiseptic and germicidal effects under conditions simulating as nearly as is possible in the laboratory the application of antiseptics or germicides to broken skin surfaces may be obtained.

The problem of massive infection is frequently confronted in the practical use of antiseptics. We have previously shown that the action of antiseptics in the presence of massive infection may differ widely from their action under the extreme refinements of the present standard methods wherein the organisms are readily available to the action of the antiseptic. Organisms are not commonly found in the relative dilution of the agar cup plate method of Himebaugh. Hence an antiseptic should be tested in the presence of massive infection or contamination. Therefore, the following technic is offered as a modification of that set forth in previous communications. It enjoys the advantage of being more specifically standardized.

Organisms of known virility and resistance to phenol according to the classification of Reddish are used. They are transplanted for three successive days on agar slants of the following composition: Armour's peptone, 10 Gm.; Liebig's beef extract, 5 Gm.; salt, 5 Gm.; agar, 15 Gm.; distilled water, 1,000 cc., adjusted to a pH of 6.8. Five cubic centimeters of the agar is placed in each of the usual $\frac{5}{8}$ by $\frac{5}{8}$ inch lipped test tubes and autoclaved at 20 pounds pressure for one-half hour. Immediately on removal from the sterilizer the tubes are set at an angle of about 15 degrees to the horizon to insure as nearly as possible even and equal slant surfaces, and also to prevent the formation of the undesirable water of condensation which results from the usual remelting and recooling method of preparing the slants.

From the third successive culture a fresh subculture (known as A) of each organism to be used, is made as follows. With a straight nichrome needle, a smear, or at least three streaks, are made on a fresh agar slant (A). This is incubated at 37.5 C for twenty-four hours. At the expiration of this time, 10 cc of the antiseptic to be tested is added to the culture (A). This should be adequate to cover the slant completely when in an upright position. The antiseptic is added at a temperature of 37.5 C. Thenceforth the cultures are maintained at the same temperature by means of a water bath. At intervals of 5, 10, 15, 30 and 60 minutes, transplants from the cultures (A) are made on fresh agar slants (B) or petri plates (mediums as previously described) as follows. With a straight nichrome needle a transplant is removed from the surface of the agar slant (A) and at least three streaks made on the fresh agar (B). This (B) is incubated at 37.5 C for forty-eight hours and then read.

Subcultures (C) are made from all transplants (B) in which there is doubt as to the presence of growth of the organisms.

It is possible to change the time of transplanting from A to B according to the antiseptic used and the accuracy desired. The killing time can be determined more accurately by shortening this transplant time.

The preceding methods have indicated, exclusively, the action of the antiseptic preparation with or without the presence of organic mediums on the organisms under a variety of conditions. However, in practical use, the

bacteria against which the product is used constitute only one part of the whole to be considered. Of what value is a proved antiseptic if in clinical usage its toxicity for tissue is a predominant characteristic? It is necessary, therefore, for a complete evaluation of the product, to determine its effect on living animal tissue, the type with which it will come into contact. Two alternatives are open for investigation: (1) the development of a tissue culture technic in which embryonal muscle and epithelial tissue are used, and (2) direct animal experimentation.

1 By comparing the growth of the tissue to which the antiseptic has been added in clinical dilution with the growth of a similar preparation which lacks the antiseptic, one may determine a phase of tissue toxicity. An additional refinement which might be added would be a similar tissue culture preparation to which a known amount of bacterial inoculation had been added, as well as the antiseptic. This would give a direct comparison of germicidal properties in the presence of a large amount of organic matter and tissue, as well as a simultaneous index of the toxicity of the product toward the tissue.

2 The second phase of tissue reaction, thus far not satisfactorily studied, is that of direct animal experimentation. Many biologic products, several of the drugs, and other alkaloids have been directly standardized by animal tests, so that the clinician has incontrovertible proof of their physiologic action. We may in the future anticipate a somewhat similar result to be derived from a carefully worked out animal experimental procedure to determine the value of antiseptics.

CONCLUSIONS

1 The older standard methods of evaluating antiseptics are not entirely satisfactory as a means of judging modern antiseptics, yet the results with these methods are quoted to prove the great value of products newly introduced.

2 The continuance of the use of *Bacillus typhosus* as a single standard organism to determine the value of antiseptics for use against pyogenic organisms is undesirable.

3 It is highly desirable that each antiseptic, germicide and bacteriostatic preparation should be tested against a variety of representative organisms and under a variety of conditions simulating the conditions these preparations are expected to combat, before they are made available for general use.

4 The determination of the practical value of antiseptics is the only reason for the existence of these tests, yet the present standard methods fail to give satisfactory information on the practical efficacy of the product.

5 Various workers have been striving to correct this situation against strong opposition from advocates of the older methods.

6 This unfortunate situation results in exorbitant claims on the part of the manufacturers, the sufferers being the lay public and also the medical profession.

7 The methods advocated for a complete survey of the value of an antiseptic are as follows: (a) The phenol coefficient method devised by Reddish. This will weed out many worthless preparations and will offer a standard of comparison with former products. (b) The agar cup plate method of Himebaugh. This method demonstrates the penetrating powers of an antiseptic and its activity in the presence of blood serum. (c) The massive infection method described

by us. This determines the activity of the antiseptic in the presence of massive infection.

8 The testing of antiseptics by means of tissue culture and animal experimentation should be added as soon as standardized methods of sufficient accuracy are available.

ANGINA PECTORIS AND DIABETES MELLITUS

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When 122 cases of angina pectoris¹ complicating diabetes were analyzed in 1927,² but few other cases for comparison could be found even in such summaries as those of Kahn,³ Levine,⁴ or White.⁵ Since 1927, the association of diabetes and angina has become still more prominent not only in the diabetic clinic at the New England Deaconess Hospital but also among our cases after discharge, so that we are now able to report 210 such cases. Certain features of angina in diabetic patients are sufficiently distinctive to suggest that diabetes may bear an important etiologic relationship to coronary disease and angina.

SELECTION OF CASES

Every patient in this series had paroxysmal attacks of pain or a sense of constriction of the chest. The pain, pressure or sense of constriction was localized in the precordial region or more commonly beneath the sternum with or without radiation to an arm or the neck, was usually brought on by exertion or by emotional excitement, and was relieved by rest, vasodilators or hypnotics. Other types of chest pain were rigidly excluded, and it will be evident from what follows that the cardiac pain in the patients of this series always implied serious organic disease of the heart. Acute coronary thrombosis occurred frequently as a terminal event, but the series was selected to include only those patients with previous attacks of angina.

EPIDEMIOLOGY AND ETIOLOGY

Incidence.—The occurrence of 210 cases of angina in 7,000 cases of diabetes mellitus, exceeding so markedly the incidence of angina in a general hospital population, is the first indication of a specific influence on the part of diabetes. A recent compilation of the causes of death in Joslin's series shows that arteriosclerotic heart disease has risen to first place among all causes of death among 1,250 fatal cases of diabetes in the last four years with an incidence of 23 per cent. The increasing longevity of diabetic patients means longer duration of diabetes as well as advancing age. We believe the incidence to be greater than is accounted for by age alone.

Sex.—A second suggestion of a diabetic influence is afforded by the sex ratio. In this group, 122 were males and 88 were females in contrast to the usually much greater proportion of males. Heberden gave a ratio of 30 to 1, Osler of 7 to 1, and the average proportion in about 1,100 cases compiled from the reports

of Kahn, Schmidt,⁶ Brooks,⁷ Levine, Kahn and Barsky,⁸ and White was 3 males to 1 female. Such a leveling influence on the sex incidence would be expected, since the incidence of diabetes is nearly the same in the two sexes.

Age.—The average age at onset of diabetes was 51 years for both sexes and the average age at onset of angina was 60 years as compared with 57 years in White's nondiabetic series. On the average, diabetes had been present nine years before the onset of angina. In fact, in 188 cases the diabetes preceded the angina, and in only 9 cases did the angina precede the diabetes. In 13 cases the two diseases were discovered at the same time. The average age at onset of the angina is a little greater in the diabetic than in the nondiabetic series, again possibly owing to the fact that the commonest age for the onset of diabetes, in general, is 51 years and, on the average, angina develops from eight to ten years later.

Duration of Diabetes.—A confirmation of the view that the occurrence of angina in the diabetic patient depends on the duration of diabetes is suggested by cases found early in life among young adults with diabetes of long duration. Two cases occurred between 20 and 30 and four between 30 and 40. Three of these six younger patients died suddenly after diabetes of five six and eight years' duration, and in two instances postmortem examination revealed acute coronary thrombosis. The influence of the duration of diabetes may be further demonstrated by comparing the incidence of angina in this series with the incidence by decades of patients having diabetes ten years or more, as shown in table 1. Although diabetes most frequently develops at the age of 51 years diabetic angina occurs most frequently in the decade in which ten year cases of diabetes are most common, namely, the seventh decade.

TABLE 1—Comparison of the Incidence of Diabetic Patients in Successive Decades Ten Years or More After Onset of Diabetes With the Incidence by Decades of Onset of Diabetic and Nondiabetic Angina

Decade Years	Ten Year Cases (Joslin)	Diabetes and Angina	Nondiabetic Angina (Huchard)
0 to 9			
10 to 19	9		3
20 to 29	19	3	5
30 to 39	54	4	44
40 to 49	174	21	87
50 to 59	46	6	7
60 to 69	70	5	4
70 to 79	310	20	27
80 to 89	51		7
Total	1,500	210	277

of life. The contrast with nondiabetic angina is apparent in Huchard's⁹ series in which the decade of greatest incidence is the fifth. The later age of development of angina in the diabetic patient seems to depend on the fact that an exposure to diabetes of several years' duration is an important factor in its etiology.

Symptoms of Diabetes.—In general the character of the diabetes in this series was mild in accordance with the age of the patients. The average carbohydrate in the diet prescribed in the hospital for cases without insulin was 91 Gm. and for cases with insulin it was 93 Gm. The lowest carbohydrate tolerance was 2

¹ Hereafter for brevity's sake angina will be used instead of angina pectoris.

² Hamilton and Root cited by Joslin. *Treatment of Diabetes*, ed. 4, 1928, p. 703.

³ Kahn M. H. *Am. J. M. Sc.* 1-2, 1925 (Aug.) 1926.

⁴ Levine S. A. *Angina Pectoris*, J. M. A. 7-9, 9.3 (Sept.) 1922.

⁵ White in Nelson's *Loose Leaf Medicine* 4: 502 A, 1926.

⁶ Schmidt R. *Med. Klin.* 18, 69 (Jan. 1) 1923.

⁷ Brooks Harlow. *Internat. Clin. Cases* 2, 1, 12, 1925.

⁸ Kahn M. H. and Barsky I. *Arch. Int. Med.* 2, 401 (Oct.) 1922.

⁹ Huchard W. *Compt. Rend. Acad. Sci. Paris*, 1922, 240, 1923, 1924.

Gm in a case treated before the discovery of insulin and the highest was 223 Gm. The average blood sugar for the entire group was 0.17 per cent. One hundred and twenty-one patients took insulin and the average dose was 13 units. The dietary treatment of this group has varied, but the average duration of diabetes of nine years indicates that in the great majority of cases the onset of diabetes occurred before the discovery of insulin, and especially before the inauguration of modern dietary measures. They serve as a control group for future work. We hope that the use of insulin and diets more nearly normal in their proportions of carbohydrate, protein and fat will in the future prevent the premature development of coronary sclerosis, as recently intimated by Shephardson.¹⁰

Heredity.—Twenty-six patients gave a family history of both diabetes and vascular disease, forty-seven patients, of diabetes without vascular disease, making a total of seventy-three with a diabetic heredity. In seven patients angina had occurred in other members of the family, while in sixty-six patients there was a family history of vascular disease but no angina or diabetes. Thus, ninety-nine patients had an hereditary history of vascular disease.

Hypertension.—Hypertension with a systolic pressure above 150 occurred in 110 patients. It is possible that hypertension was present at some time in a number of the other patients of this series even though blood pressure readings were usually taken on several occasions.

Other Factors.—The average height of the men was 5 feet 7 inches (170 cm), and at their maximum weight they were 25.3 per cent above standard. The average height of the females was 5 feet 2 inches (157.5 cm), and at their maximum weight they were 45 per cent above standard. These figures do not materially differ from those of the diabetic group as a whole. Rheumatic fever was not a predisposing factor. Four patients of 174 had positive Wassermann reactions, making an incidence of 2.3 per cent, as compared with 1.9 per cent for 5,086 diabetic patients given by Joslin.¹¹ One patient had aortitis. Race was of minor importance, thirty-three cases, or 15.7 per cent, occurred among Jews, but in this series of diabetic patients the Jewish race provides 13 per cent of all cases.

PATHOGENESIS

The amount and extent of arteriosclerosis in diabetic subjects that have been examined post mortem is astonishingly great. Every one with a duration of diabetes of five years or more has shown some degree of coronary sclerosis. Actual thrombosis with infarction of the heart, recent or healed, has been present in 25 per cent of 100 autopsies of diabetic subjects at the New England Deaconess Hospital, and in the larger series reported by Warren¹² the incidence of coronary thrombosis with infarction of the heart was 12 per cent. Necropsy in seventy-seven cases of diabetes reported by Blotner¹³ showed marked disease of the coronary vessels in 45 per cent, while in 10 per cent death was due to cardiac infarction. Levine¹⁴ found diabetes present in 14 per cent and Connors¹⁵ in 10 per cent of their cases with coronary thrombosis. Rupture of the

heart occurred twice and aneurysmal dilatation of the wall of the left ventricle twice in the Deaconess Hospital series. This extraordinarily high incidence may be compared with the observations of Benson and Hunter,¹⁶ in whose series of 1,750 patients, most of whom were coroners' cases, coronary infarction plus cardiac aneurysms formed 4 per cent of the whole.

Advanced coronary disease, as well as sclerosis of the myocardium, has been present in every case of angina examined post mortem at the New England Deaconess Hospital. In table 2 is presented a summary of the

TABLE 2—Postmortem Observations in Twenty-Five Cases of Angina and Diabetes

Case	Duration D M	Sex*	Age at Death Years	Weight Gm	Heart		
					Coronary Arteries†	Sclerosis of the Myo- cardium	Infarc- tion
1	14	♂	61.8	520	C + + + +	++	+
2	18	♂	65.5	240	C + + + +	++	0
3	27	♂	54.8	325	C + + + +	+++	+
4	30	♀	74.0		C + + + +	+	+
5	61	♀	52.3	440	C + + + +	+	+
6	69	♂	69.4	440	C + + + +	+++	—
7	70	♂	64.7		C + + + +	+++	+
8	80	♂	33.0	315	C + + + +	+	0
9	84	♀	61.3	430	C + + + +	+	+
10	87	♀	57.8	510	C + + + +	+++	—
11	89	♀	70.1	240	C + + + +	++	+
12	100	♀	56.3	280	C + + + +	++	0
13	140	♂	67.0	570	C + + + +	++	+
14	148	♂	60.3	240	C + + + +	+++	+
15	163	♂	66.2	285	C + + + +	+++	+
16	169	♀	57.7	530	C + + + +	+++	+
17	207	♀	66.6		C + + + +	+++	0
18	218	♀	70.0	370	C + + + +	+++	—
19	230	♀	62.0	333	C + + + +	++	—
20	250	♀	76.0	450	C + + + +	++	—
21	260	♀	57.1	400	C + + + +	+++	+
22	281	♀	63.0	330	C + + + +	+++	+
23	337	♀	82.7	340	C + + + +	++	0
24	350	♀	67.0	410	C + + + +	+++	+
25	380	♂	73.6	500	C + + + +	+++	+

* In this column ♂ indicates male ♀ female
† C indicates calcification

observations. The character of the sclerosis and calcification of the coronary arteries was uniform. The coronary arteries are of the muscular type and show changes strikingly similar to the changes found in the muscular arteries of the legs in diabetic gangrene. Evidence of syphilitic or rheumatic infection of valves, myocardium or aorta was absent except in patient 2, who had syphilitic aortitis but more advanced coronary disease. The average weight of the heart in twenty-two patients at autopsy was 386 Gm. The advanced character of the myocardial changes, in spite of the mildness of the anginal attacks, is a distinctive feature clearly shown by the autopsy data. In fact, one wonders how many diabetic patients with undoubtedly marked coronary sclerosis escape having angina.

The electrocardiogram is the best laboratory means of determining coronary disorder before death. Most authors, in reviewing unselected series of angina, have not found this procedure to be helpful in more than 40 per cent of the cases. In fifty cases of this series studied by Dr. J. Lamelas, definite electrocardiographic changes occurred in 60 per cent. Significant inversion of the T wave (coronary type) in leads I or II, or the Pardee¹⁷ sign was present in twenty-three cases. Other observations consisted of two cases of partial atrio-ventricular block, three cases of bundle branch block and two of auricular fibrillation. This emphasizes again the advanced cardiac pathologic change typically found in this series.

10 Shephardson H. C. Arteriosclerosis in Young Diabetic Patient Arch Int Med 45: 674 (May) 1930

11 Joslin E. P. Treatment of Diabetes ed 4 Philadelphia Lea & Febiger 1928 p 754

12 Warren Pathology of Diabetes Philadelphia Lea & Febiger 1930 p 674

13 Blotner New England J Med 203: 709 1930

14 Levine S. A. Medicine 8: 245 (Sept.) 1929

15 Connors Read before the Association of American Physicians Atlantic City May 6 1930

16 Benson R. L. and Hunter W. C. Northwest Med 24: 606 (Dec.) 1925

17 Pardee H. E. B. Am J M Sc 169: 270 (Feb.) 1925

SPECIAL POINTS IN TREATMENT

The treatment of angina by the usual drugs and methods is not within the purpose of this paper, but certain aspects of diabetic treatment should be mentioned. Although it is difficult to demonstrate a direct and immediate effect exerted by diabetic treatment on the frequency and character of anginal attacks, a variety of facts indicate that metabolic factors are of importance. Middleton and Oatway¹⁸ found definite depression of the T-wave in 100 per cent of cases of insulin shock with true hypoglycemia. Experimentally Cruickshank¹⁹ found that although the isolated normal heart responds to insulin by storing glycogen, provided the blood sugar is not abnormally low, the diabetic heart stores glycogen only if the blood sugar is maintained well above normal. After diabetes of eight or more years' duration, the heart may become accustomed to an elevated blood sugar. Sudden reductions in the blood sugar brought about by reductions in diet or by insulin are not well borne. In patient 11, fatal coronary thrombosis, proved at autopsy, occurred during insulin hypoglycemia. In Blotner's series, death from cardiac infarction occurred in three cases shortly after a rapid fall in blood sugar concentration following the administration of insulin. By contrast, the relief of attacks when glycosuria and hyperglycemia were controlled by properly adjusted insulin have been reported by Hetenyi.²⁰ The use of dextrose solution, injected intravenously in amounts of 20 cc of a 50 per cent solution, sometimes gives relief when attacks occur frequently, and in one case gave greater subjective comfort than any other means. In one patient, recently, the attacks became less frequent and less severe when, by better adjustment of diet and insulin, the carbohydrate of his diet was slowly increased from 40 to 120 Gm. During coronary thrombosis, especially if congestive failure is present, a marked decrease in carbohydrate tolerance is observed, and the degree of loss parallels the seriousness of the prognosis. However, it is by no means always true that a slight disturbance in the carbohydrate tolerance gives a good cardiac prognosis. In general, with better control of the diabetes, a diminution in the frequency and severity of the anginal attacks is often obtained.

PROGNOSIS

The diabetic patient with angina has a poorer prognosis than the nondiabetic patient. The average duration of life from the first attack of angina to death was only 2 years in the 136 fatal cases. Eighty-five, or 62.5 per cent, of these deaths occurred during the first year after the onset of angina, in contrast with 25 per cent in Gallavardin's series. White²¹ gives the average duration of life in his series of 200 unselected patients as 3.4 years for fatal cases. Mackenzie²² found the average duration of life in 213 fatal cases of angina to be 5.4 years. Improvement in diabetic diets may retard the precocious development of vascular disease in the future.

The patients in our series dying in the first year of angina were those with conspicuously little treatment of diabetes. In contrast are the instances of death after angina of fifteen years' duration, patients 20 and 25. One, a dentist, and the other, a physician

were faithful to the best diabetic treatment available, and as years passed carbohydrate tolerance greatly improved. With present-day diets approaching normal standards, fewer diabetic patients should develop angina and more should survive for as long a period as the nondiabetic.

COMMENT

The association of diabetes, angina and intermittent claudication has been described by Heitz.²³ Is there some single inborn or inherited factor responsible both for diabetes and for a marked susceptibility of the heart to coronary disease and to angina? This conception would make the development of diabetes merely incidental in the life of a patient predestined to coronary disease. One would expect in such combined cases the same sex distribution as in nondiabetic angina, that angina would as frequently precede the diabetes as the reverse, and, because one third of all diabetes originates before the fortieth year of age, that the average age of onset in diabetic angina might be earlier than in nondiabetic cases. On the contrary, however, if the development of angina depends on the existence of clinical diabetes, then the frequency of angina in diabetes would be greater among cases of long duration. The curve of incidence of angina in diabetes would follow not the ages of onset of diabetes, but the curve of cases with diabetes long enough for diabetes to bring about its effects (table 1). The age of greatest frequency of diabetic angina would be the decade in which there is the largest number of persons alive after having diabetes eight or more years, namely, the decade from 60 to 69 years. At present it seems more consistent to regard diabetes and the metabolic changes associated with it as contributing directly to bring about coronary disease, and the inherited factor is that of the diabetic tendency already generally accepted.

For the apparently increasing association of diabetes and angina, the following explanations may be offered.

1 Formerly, the average duration of life of the diabetic patient was too short to permit the full effect of diabetes to be exerted on the coronary vessels and myocardium.

2 The mildness of the attacks, in many cases due to the low nervous sensitivity of diabetic patients or the inactive life they lead, especially under former methods of treatment, gave little evidence until a fatal attack, which in many cases was regarded as diabetic syncope or atypical coma.

3 Formerly, the lack of blood sugar analyses prevented the diagnosis of diabetes. The tendency for an increase in the renal threshold with increasing duration of diabetes may have resulted in the patient's urine being sugar free when his angina was discovered in the cardiac clinic. The use of urine and blood sugar analyses one hour after a full meal and dextrose tolerance tests is often necessary to establish the presence of diabetes, and should be more frequently employed in the study of angina.

SUMMARY AND CONCLUSIONS

1 Two hundred and ten cases of angina complicating diabetes mellitus are reviewed.

2 The incidence of angina in patients with diabetes mellitus is extraordinarily high.

3 The nearly equal sex ratio suggests the lacking influence of the associated diabetes.

4 The occurrence of angina in the young, the long duration of diabetes before the onset of angina and

18 Middleton and Oatway. *Am J M Sc* 18:46, 1901.
19 Cruickshank, L. W. H. quoted in *New England J Med* 201:600 (Sept. 19) 1929.
20 Hetenyi, G. *Wien Arch f inn Med* 13:95 (Sept.) 1926.
21 White, P. D. *Prognosis of Angina Pectoris and of Coronary Thrombosis*. J. A. M. A. 87:1525 (Nov. 6) 1926.
22 Mackenzie, James. *Angina Pectoris*. London: Frowde, 1923.

23 Heitz, I. *Arch d mal d'art. 17: 53 (1901)*

the late age of onset of angina, all point to the complicating diabetes as the factor that makes this group differ from the nondiabetic series

5 The prognosis for life is shorter than in the non-diabetic series but should improve with modern dietary and insulin treatment

6 Diabetes mellitus with its associated coronary disease is a frequent contributing factor in the production of angina and, like syphilis, its presence should be investigated by special methods, such as blood sugar analyses

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DIABETES AND PERNICIOUS ANEMIA

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The combination of pernicious anemia and diabetes mellitus has been repeatedly described as extremely rare. The first case was reported in 1910 by Parkinson.¹ Within the last two years, nine instances have occurred at the New England Deaconess Hospital, and I have been able to discover a total of forty-eight cases, including unpublished records of patients given to me by other physicians and cases recorded in the literature. The increased interest of physicians inspired by the recent discoveries in the treatment of the two diseases has stimulated diagnosis, but another factor is the increase in the duration of life resulting from improvement in treatment, which affords more opportunity for the combination to occur.

The relative frequency of the two diseases is indicated in tables 1 and 2 by the statistics of Goudsmit² for Holland and by statistics from the Metropolitan Life Insurance Company (New York), prepared by Mr. Herbert Marks.

Since the two diseases are most frequent at approximately the same period of life, there should be a reasonably frequent occurrence of the combination unless there is some specific factor preventing the combination. I have found in the New England Deaconess Hospital series and in the case records of Dr. E. P. Joslin a total of 13 cases in approximately 7,000 cases

In table 3 are listed forty-eight cases. The first thirteen are from the New England Deaconess Hospital diabetic clinic, and the fourteenth from the Peter Bent Brigham Hospital, Boston. The remainder have been abstracted from clinical reports or are reported by courtesy of physicians who have given me their records.

A study of etiologic factors gives various interesting comparisons. The incidence of diabetes is nearly equal in the two sexes, whereas in pernicious anemia males tend to outnumber the females. Of the forty-eight cases in table 3, the males number twenty-four as against twenty-four females. The youngest patient in this series to develop pernicious anemia was 32 and the oldest 70 years of age. Nineteen were between the ages of 45 and 55 years, the period of greatest frequency for the onset of pernicious anemia. The commonest age for the development of diabetes is 51 years. It is notable that in thirty-one cases the diabetes definitely preceded the anemia. In four cases, pernicious anemia occurred first. In the remainder either the diagnoses were discovered at the same time or else the data are incomplete.

Hereditary is increasingly important in any consideration of the etiology of diabetes. In the thirteen cases from the New England Deaconess Hospital, pernicious

TABLE 2.—Death Rates per Hundred Thousand from Diabetes Mellitus and from Pernicious Anemia, White Males and White Females Separately.*

	White Males		White Females	
	Diabetes Mellitus	Pernicious Anemia	Diabetes Mellitus	Pernicious Anemia
1921	10.9	2.0	19.6	4.1
1922	11.6	1.8	22.3	4.2
1923	11.1	2.2	20.6	4.0
1924	9.3	2.3	9.6	4.0
1925	9.3	2.4	20.8	4.0
1926	10.3	2.4	22.3	4.0
1927	9.7	2.1	22.5	4.0
1928	10.4	1.6	22.0	2.6
1929	10.6	1.4	24.0	2.1

* Metropolitan Life Insurance Company, Industrial Department 1921 to 1929.

anemia was present in the families of three and diabetes was present in the families of five. Conner,⁴ in studying the families of patients with pernicious anemia, has reviewed information indicating the frequency of familial cases and the frequency of achlorhydria in other members of the family. One of Goudsmit's patients with combined diabetes and pernicious anemia had a brother and a sister with diabetes, but the familial data are not available for most of the other thirty-seven cases.

An extraordinary illustration of the familial relationships of diabetes and pernicious anemia is given from the records of Dr. George R. Minot and quoted by Joslin.⁵

Patient, aged 59 years, male, has undoubted pernicious anemia. Brother, aged about 59 years, "has often had sugar in urine and is said to have pernicious anemia with mild cord symptoms." Sister, aged 55 years, "anemic for eight years," undoubted pernicious anemia now. Brother, aged about 50 years, has undoubted diabetes from history given. Brother, aged about 49 years, well. Mother died of diabetes. Father "showed sugar in urine in last illness and died of infected foot that became gangrenous." Father's brother "had anemia and died of it." Father's sister died in thirties of pneumonia. No other brothers or sisters. Mother's sister had diabetes.

4 Conner H. M. Hereditary Aspect of Achlorhydria in Pernicious Anemia. J. A. M. A. 94: 606 (March 1) 1930.
5 Joslin E. P. Treatment of Diabetes Mellitus. ed. 4. Philadelphia: Lea & Febiger, 1928. pp. 761-762.

TABLE 1.—Deaths from Diabetes and Pernicious Anemia in Holland (Goudsmit)

	1926	1927	1928
Diabetes mellitus	1,190	1,233	1,255
Pernicious anemia	301	366	222

of diabetes. Adams³ states that during one period at the Mayo Clinic among 2,000 cases of diabetes and 1,000 cases of pernicious anemia but 3 instances of the combination were observed. Goudsmit² found five cases in Holland among a group consisting of 1,650 cases of diabetes and 379 cases of pernicious anemia seen between 1925 and 1930. It is notable that the great majority of the 48 cases in this series have occurred within recent years, and probably the combination is much more frequent than is generally supposed.

1 Parkinson. Lancet 2: 543 (1910).
2 Goudsmit J. Nederl. tijdschr. v. geneesk. 74: 1429 (March 22) 1930. abstr. J. A. M. A. 94: 2033 (June 21) 1930.
3 Adams S. F. M. Clinics N. America 8: 1163 (Jan.) 1925. Permission to refer to three later cases from the Mayo Clinic kindly given by Dr. Adams, who is to report them in detail.

TABLE 3—Forty-Eight Cases of Combined Diabetes and Pernicious Anemia

Case or Author	Sex	Age at Onset		Gastric Free Hydrochloric Acid	Date of Blood Counts	Blood				Urine			Spinal Cord Changes	Treatment	End Results			
		D yr	P yr			Hemo globin per Cent	Red Blood Cells, per Mill.	Sugar per Cent	Was ser mann	Sugar per Cent	Dia cetic Acid	Liv er or Dead			Date	Age	Cause	
Deaconess Hospital	♂	39	66		Dec 1906	60	18			10	0			Iron	D	Jan 1907	69	P. A.
	♂	37	64	0	Jan 1910	30				0				Transfusion	D	Mar 1910	63	Callstones
	♂	43	49		Nov 1924	70	33	0.20	Neg	19	0	0		Iron and arsenic	D	Mar 1926	52	P. A.
	♂	40	62		Nov 1926	40	17	0.23	Neg	14	0				D	Apr 1927	62	Coma
	♂	50	53	0	Jan 1928	40	12	0.23	Neg	0.2	0	++		Liver insulin	L	Aug 1929	58	
					Dec 1928	70	34											
					Feb 1929	80	40											
	♀	44	47	0	Dec 1928	70	38	0.21	Neg	17	0	++		Liver insulin	L	July 1930	48	
	♀	54	61	0	Mar 1928	60	18	0.16	Neg	0	0	0		Liver	L	Feb 1929	62	
					Aug 1928	90	52											
	♂	61	65	0	Dec 1926	36	23							Liver insulin	D	Oct 1930	69	Gangrene
					Jan 1929	68	46	0.26	Neg	0.2	0	++						
					May 1929	90	46											
	♂	60	60	0	July 1929	50	29	0.18	Neg	17	0	0		Liver	L	July 1929	60	
	♂	53	56	0	July 1929	70	21	0.34	Neg	48	+	0		Liver insulin	L	July 1929	56	
					July 1929	80	39	0.11										
Peter Bent Brigham Hospital	♀	61	58	0	Aug 1926	65	22	0.20	Neg	14	0	0		Liver	L	Nov 1929	61	
	♀	63	68	0	Oct 1929	50	10	0.21	Neg	0	0	0		Liver	L	Nov 1929	63	
	♀	59	64	0	Dec 1929	70	30	0.20		20	0	+		Insulin liver	L	July 1930	63	
	♀	50	50	0	Mar 1920	70	38	0.13	Neg	10	+	0		Transfusion diet	L	Apr 1920	50	
					Apr 1920	30	19	0.30		20	+							
					Apr 1920	40	21											
Parkinson Lancet 2 543 1910	♂	49	48	0	June 1909	30	14			0	0			Arsenic and hydrochloric acid	D	Dec 1909	49	Diabetic coma
					Dec 1909	40	20			0	0			Arsenic	D		46	Coma
Chrostek Wlen klin Wehnschr 5 191 1918	♂	30	40		1918		10			40	0							
Giffin and Bowler Minnesota Med 6 13 (Jan) 1923	♂	43	48	0		60	31	0.39	Neg	25		?		Diet	D	July 1933	51	
Schumann J A M A 87 67 (Aug 29) 1923	♀	50	50		Sept 1923	30	12	0.22	Neg	++	0	++		Transfusion insulin	D	Mar 1923	57	P. A.
Adams M Clinics N America 8 116 (Jan) 1923	♀	58	59	0	Mar 1923	78	39	0.32	Neg	82	0	+		Transfusion insulin	D	Apr 1924	60	P. A.
	♀	46	54	0	Jan 1924	41	18	0.41		35	0	+		Insulin	D	Oct 1924	57	
	♂	44	54	0	Dec 1923	48	28	0.23	Neg			+						
	♂	50	51	0	July 1923	60	36			60	+							
	♀	64	64	0	Mar 1926	55	24	0.22				+		In ulin liver	L	Aug 1929	5	
	♀	62	62	0	1926	50	28		Neg	10	0	+			L	Oct 1929	68	
Wright Clifton M Bull 1- 64 1926	♀	49	51	0	Sept 1922	56	28	0.17	Neg	0	0	+						
	♂	49	51	0	Dec 1925	80	41	0.23	Neg	0	0	+		Insulin liver	L	Sept 1926	52	
	♂	59	66	0	Feb 1926	69	38											
	♂				Jan 1926	36	13	0.30	Neg			+		Transfusions(S)	D	Sept 1926	66	
					Apr 1926	31	18							insulin				
	♂		62	0	Jan 1926	60	26	0.28	Neg	0	0	0		Liver insulin	D	Aug 1927	53	Thrombosis pulmonary artery
			0		June 1927	109	58											
Baumgartner Clifton M Bull 16 1 1930	♂	63	60	0	Mar 1927	30	16	0.21	Neg	0.2	0	0		Liver insulin	L	Sept 1929	67	
					June 1927	95	59											
Arntzen Norsk Mag f Læge vidensk 91 469 (May) 1930	♀	67	68		Oct 1928	44	15	0.24						Liver	L	Oct 1929	69	
Hitzrot Am J M Sc 177 218 (Feb) 1929	♂	39	40	0	Mar 1926	42	15	0.23	Pos					Transfusions(S) liver insulin	L	Apr 1928	41	
					Nov 1927	80	40											
Yang Quoted in Joslin Treatment of Diabetes ed 4 1928 p 761	♀	41	46		Mar 1927	20	10	0.44						Transfusions liver insulin	L	June 1927		
	♀	50	60		June 1927	75	35											
	♀				July 1929	25	17		Neg			0		In ulin liver	L	Feb 1930		
Rabinowitch Personal communication to author	♂	58	58	0	Feb 1924	24	11	0.34		0	0	0		Arsenic and hydrochloric acid	D	Feb 1924	58	P. A.
	♂	47	48	0	July 1925	24	08	0.13		0	0	0		Liver diet	L	Aug 1929	53	
	♂	60	61	0	Mar 1929	70	31	0.19		0	0	0		Liver and diet	L	July 1929	62	
	♀	50	56	0	Oct 1927	60	31			20	0			Insulin liver	L	Aug 1929		
					Apr 1928	86	50	0.21	Pos	20	+++							
Castle Personal communication to the author	♂	40	40.5	0	July 1928	60	20	0.10		10		0		Liver	L	Mar 1929		
					Oct 1929	80	33											
Murphy Personal communication to the author	♂	51	52	0	Dec 1926	70	32	0.25	Neg	20	0	+		Liver	L	Mar 1929		
Berghausen South M J 22 594 (June) 1929	♀	55	70		Nov 1925	60	27	0.21	Neg	11	0	+		Liver	D	Feb 1929		
Neulengracht Klin Wehnschr 8 18 (Jan 1) 1929	♀	33	33		Nov 1927	56	19	0.26		++	0			Liver insulin	L	June 1929	33	
Bowen I A M A 97 30 (July 5) 1929	♂	55	55	0	May 1929	50	27	0.20		++	0			Liver in ulin	L	Feb 1929	56	
Goudsmit Nederl Tijdschr v Geneesk 74 1447 (March 22) 1930	♂	51	50	0	July 1929	60	23	0.18	Neg	20	0			Liver in ulin Diet	L	Nov 1929	50	
	♂	43	40		Mar 1926	30	12											
	♂	60	61		Jan 1928	50	10		Neg									Coma
	♂	63	63		Jan 1928	8	10	0.10	Neg	1.5	0			Diet	L	Jan 1928	63	
	♂	60	63		Nov 1926	20	06	0.40						In ulin	D	Nov 1926	63	P. A.
	♀	32	30		Apr 1925	20	31	0.20		1				In ulin liver	D	1925	32	Tuberculosis
Tilgren Acta Med Scand 1930 supplement 34 86	♀	54	62		Feb 1929	19	27	0.21		0				In ulin liver	D	June 1929	62	Gangrene

* In this column ♂ indicates male ♀ female

Definite information given concerning this Mother's brother died of old age. No other brothers or sisters. Patient's paternal grandfather probably died of pernicious anemia. He was said to have been very pale in last two years of life and had difficulty in walking. An ill-defined history of this man's brother suggests that he had anemia.

Achlorhydria as an etiologic factor in pernicious anemia has been given a new significance by the work of Castle,⁶ who has shown that gastric digestion is defective in pernicious anemia since the stomach is unable to prepare, as it can do normally from protein, a substance effective in alleviating anemia. Immediately this raises the question of the relationship of diabetes and achlorhydria, since in this series the diabetes has so clearly preceded the anemia in most cases. Bowen and Aaron,⁷ Mason,⁸ Joslin⁹ and Rabinowitch¹⁰ have recorded series of observations indicating not only that achlorhydria occurs in from 30 to 40 per cent of diabetic patients but that its frequency tends to increase with the duration of diabetes and the age of the patient. In turn, it must not be forgotten that achlorhydria is much more frequent in healthy old persons than in youth. Conner studied achlorhydria in the families of 110 patients with pernicious anemia and found an increasing incidence of achlorhydria with increasing age, so that between the ages of 50 and 60 years 25 per cent had achlorhydria. The incidence of achlorhydria as observed in the cases of diabetes from the Deaconess Hospital is combined in table 4 with the results of Bowen and Aaron. In 20 per cent of the cases under five years' duration, 35 per cent of those between five and ten years, 45 per cent of those between ten and fifteen years, 29 per cent of those between fifteen and twenty years, and 33 per cent of those between twenty and twenty-five years, there was no free hydrochloric acid.⁹

TABLE 4—Gastric Secretion in Diabetes According to Age of Patient and Duration of Disease

Number of Patients	Duration of Disease	Average age Age	Sex		Free Hydrochloric Acid		
			Male	Female	Normal or	Dimin ished	Absent
					Deaconess Hospital		
10	Under 5 years	46	4	6	8	0	2
10	From 5 to 10 years	53	3	7	6	1	3
7	From 10 to 15 years	57	1	6	5	0	2
6	From 15 to 20 years	58	1	4	4	0	1
5	From 20 to 25 years	50	3	2	4	0	1
Bowen and Aaron							
46	Under 5 years	49	16	30	29	8	9
16	From 5 to 10 years	53	3	13	4	6	6
4	From 10 to 15 years	60	2	2	1	0	3
2	From 15 to 20 years	68	1	1	1	0	1
1	From 20 to 25 years	64	0	1	0	0	1
108			34	72	62 or 58 5%	15 or 14 2%	29, or 21 3%

Diabetes of long duration plus achlorhydria may prepare the way for the development of pernicious anemia. The influence of such factors as gallstones and cholecystitis, or other infections is suggested by two cases in which severe anemia (not finally classified as pernicious) developed during observation in the Deaconess Hospital while treatment was being given for severe

infections of the extremities. In both cases repeated transfusions of blood were utilized. Patients 2 and 12 had gallstones, as did Goudsmit's first patient. Patients 3 and 5 had advanced pyorrhea and apical abscesses. Patient 4 had an amputation of the toe for osteomyelitis and developed anemia shortly thereafter. He had one remission and died two years later. A suggestion of diabetic influence is given by patient 14, from the Peter Bent Brigham Hospital, in whom, as severe acidosis developed, a severe degree of anemia rapidly occurred. Also in patient 4, when acidosis developed, his attending physician noted that the anemia was severe and that the blood smear contained many nucleated red cells. This is all the more significant when it is remembered that ordinarily the development of acidosis and dehydration in a diabetic concentration of the blood tends to obscure anemia by giving a relative polycythemia. Furthermore, during a period of severe anemia, the diabetes may also be resistant to treatment, as was noted by Adams.

PATHOLOGY

The pathologic changes of combined diabetes and pernicious anemia have been little studied. Seven autopsies have been found. In Parkinson's patient pernicious anemia preceded the diabetes, which developed rather acutely, and death occurred fifteen days after the onset of diabetic symptoms, apparently from the anemia. Postmortem examination gave the following results:

Deep, red marrow in femur, sternum and ribs. Enlarged spleen. Brown-yellow liver. Chronic gastritis. Bright yellow subcutaneous fat. Small pancreas. No "ugering" of myocardium. Fatty atheromatous flecks in aorta with calcareous plaques. Congestion and severe parenchymatous degeneration of kidneys. Ectopic suprarenal gland. Anemia of brain (3 pounds, 1½ ounces [14 Kg]).

MICROSCOPIC

1 Marrow of femur. Sections were stained by S. G. Scott "tartrazin-Jenner" method in hematoxylin and eosin and in van Gieson's stain. The marrow is cellular throughout. The number of myeloblasts and myelocytes is much in excess of the number of erythroblasts and erythrocytes. Strands of erythroblasts are, however, conspicuous. There are few leukocytes. The megakaryocytes are few in number and of small size. The relative number of myeloblasts to myelocytes is abnormally high. The majority of the erythroblasts are megaloblasts. Gigantoblasts are also present. The variation in the size of the erythrocytes is extreme, microcytes being present in addition to megalocytes and gigantocytes. The erythrocytes also vary in staining reaction. There are a few macrophages containing red corpuscles.

2 Liver. There is no fibrosis. There is a little fatty degeneration of the cells surrounding some of the central veins. In tissue fixed in alcohol there is much granular pigment within the cell columns. This pigment is present throughout the lobules but is much more abundant in the peripheral zone. It gives the Trumbull's blue and prussian blue reactions.

3 Body of pancreas. The lobules do not appear to be abnormally small. The cells of the acini are well formed and brightly stained. There are numerous islands of Langerhans, many of these are of large size. The cells of the islands show no sign of degeneration, they are of normal shape and their nuclear structure is very distinct. There is neither interlobular nor intralobular fibrosis. There is no deposit of pigment.

4 Kidney. The media of the arteries is thin and there is a little reduplication of the elastic lamina. There is no increase in the interstitial tissue. The cells of the first convoluted tubules are large and swollen with well defined margin. The base is occupied by large fat globules. The rest of the proximal plasma is opaque and granular. Many of the cells have no

6 Castle, W. B. Proc. Roy. Soc. Med. (Sect. Med.) 22: 58-60 (July) 1929.
7 Bowen, B. D. and Aaron, A. H. Gastric Secretion in Diabetes. *Mellitus Arch. Int. Med.* 37: 674 (May) 1926.
8 Mason, quoted by Joslin. *Loose Leaf Medicine* 1929, p. 109 K.
9 Joslin, E. P. *Loose Leaf Medicine* 1929, p. 109 K.
10 Rabinowitch, I. M. to be published.

nucleus, in others the nucleus is pale and degenerate. The swollen cells in most of the tubules almost occlude the lumen, in a few tubules there are granular or vacuolar spherical bodies in the lumen. The cells of the ascending limb of the loop of Henle show very similar changes. In the second convoluted tubules there is much less fatty degeneration, in some there is slight catarrhal desquamation, or the lumen may contain some granular debris. A few fat granules are seen in many of the cells of the descending tubules of Henle and in the large collecting tubules. In many of the latter there is considerable catarrhal desquamation, in others there are hyaline casts. In the cells of the first convoluted tubules are a few fine granules of pigment which give the iron reactions. In the ascending limb of Henle's loop are large granules of yellow pigment which do not give an iron reaction. There is some swelling of the intercapillary substance of the glomeruli. No glycogenic degeneration is present.

To summarize the microscopic appearances of the pancreas and kidney, it may be said that the appearance of the kidney is compatible with a diagnosis of ordinary diabetes or glycosuria and suggests that the pernicious anemia was complicated by diabetes. But the pancreas shows none of the changes found in ordinary diabetes or glycosuria.

A diabetes comparable to that which occurs in hemochromatosis (diabetic bronze) might conceivably be caused by pernicious anemia. Thus, Quincke mentions a case of pernicious anemia in which pigment cirrhosis of the liver occurred. In the present case however, the complete absence of pigmentation and cirrhosis of the pancreas shows that this explanation is untenable.

The necropsy report in the first case of Adams (case 19, table 3) was summarized by him as follows:

There was considerable emaciation, the spleen weighed 312 Gm, its cut surface was brick red, the liver weighed 1787 Gm, the cut surface was yellowish, the stain for iron was positive. The pancreas weighed 68 Gm. There was extreme fatty replacement. The parenchyma was dense and fibrous. The bone marrow was grayish red. A section of the liver revealed slight thickening of the capsule and a fairly marked periportal fibrosis, microscopically. The polygonal cells were faintly stained in areas. Moderate diffuse fatty changes were present. The sinusoids were not distinct and contained small amounts of a yellowish brown pigment. Much of the pigment was distinctly within the Kupffer cells. The iron stain showed this pigment to contain hemosiderin. In the pancreas there was marked atrophy of the acinar tissue, certain areas contained none. The ducts, surrounded by islands lying in a fibrous connective tissue bed, with large spaces of loose fragmentary fibrous tissue, extended in every direction. In other areas there were groups of ducts with no acinar tissue between or around them. In still other areas, small islands of acinar tissue in a loose connective tissue framework, and marked fatty changes. The islands had hyalofibroid changes. In the bone marrow were a moderate number of megaloblasts, numerous normoblasts, and eosinophils. There was no evidence of its normal fatty structure.

Wright's third case (case 27, table 3) was extraordinary in that with modern liver treatment a remarkable remission in the pernicious anemia occurred and polycythemia developed. The patient died with thrombosis of the pulmonary artery. Patient 8 in my series died of gangrene of a foot due to thrombosis and not infection. Thrombosis may have been a factor in causing gangrene in one of Tillgren's cases. Goudsmit mentions postmortem examinations in his second and fifth cases. In the first a small pancreas and large liver were found and in the second hemosiderosis was a conspicuous feature. In Chvostek's case, chronic pancreatitis was found at autopsy. Rabinowitch's first patient (case 33, table 3) showed diffuse fatty degeneration. A remarkable feature during life in this case was the high renal threshold as indicated by a fasting blood sugar of 0.34 per cent without glycosuria.

CLINICAL OBSERVATIONS

The diabetes observed in the forty-six cases cannot be described as differing from the usual forms of the disease. In the Deaconess Hospital series, diabetes was as mild as in the average case of middle life. The blood sugars were of the usual range. All patients in the insulin era did well and developed a tolerance of 100 or more grams of carbohydrate, taking moderate doses of insulin varying from 10 to 30 units a day. Acidosis occurred as a terminal event in one case, and at the time the physician in attendance described a blood smear, showing evidence of severe anemia. The diagnosis of diabetes was in doubt in two cases of pernicious anemia described by Dr I. M. Rabinowitch. In one, the fasting blood sugar was 0.20 per cent, and in the other the maximum was 0.192 per cent when the urine was sugar free. He considers them potential diabetic patients. The first had gallstones. Postmortem examination in the first showed only diffuse fatty degeneration. In general, the degrees of anemia observed were not unusual. In the Deaconess Hospital series the patients for the most part had been under the observation of some physician and were sent for diabetic treatment. The various nervous symptoms had been regarded as due to the diabetes until the anemia was recognized. The diagnostic criteria for pernicious anemia have been the occurrence of recurrent glossitis, symptoms and signs of involvement of the central nervous system, achlorhydria, increased bile pigments in the plasma, with severe anemia of the macrocytic type together with absence of evidence after detailed study of any direct cause for the anemia, and finally rapid decrease of the anemia by the feeding of liver or a potent substitute.

It is notable that periods of exacerbation and severity in one disease usually were accompanied by a similar change in the other. Thus, in the Peter Bent Brigham Hospital case, as the patient developed severe acidosis a rapid increase in anemia occurred, the red blood cells falling in the course of a week from 3,800,000 to 1,900,000 per cubic millimeter. Adams noted in his first case that when the anemia was severe the patient was relatively resistant to insulin. The reverse occurred, however, in patient 10, in whom diabetes was well controlled with 20 units of insulin at the outset of treatment, yet six months later when the red blood count had increased from 2,100,000 to 5,140,000 per cubic millimeter the insulin dose had to be increased to 40 units. This increase in insulin took place without any increase in body weight and with an increase in diet of only 20 Gm of carbohydrate, 21 Gm of protein and 7 Gm of fat.

Evidence of spinal cord changes sufficiently gross to be readily recognized and commented on occurred in fifteen cases. In case 5 the spasticity, rigidity and weakness were so marked in December, 1928 that the patient could not walk, yet with treatment consisting of 300 Gm of liver, 50 grams (3.2 Gm) of pills of ferrous carbonate and 15 units of insulin a day combined with muscle training under the direction of Dr. M. L. Rogers, he left the hospital in three months walking without assistance and giving other evidences of marked improvement. Patient 6 presented a complicated picture. She had had definite transitory attacks of paralysis with hemiplegia and hemianesthesia. She had a speech difficulty not definitely aphasic but apparently a residual of her previous attacks. Prior to these attacks however, she had had paraesthesia, numbness and tingling in both hands with weakness, and both hands had been

had been very cold. She had had attacks of vertigo with nausea and without tinnitus. Her memory for recent events was faulty and she was emotionally unstable. The spinal fluid examination was negative. She made a remarkable improvement in mental and neurologic symptoms with liver treatment and was doing well in July, 1930, nineteen months after she was first treated with liver.

Certain comparisons between the two diseases are of interest. Numbness and tingling found in the hands, feet and legs are common symptoms of both diseases. Yet in more severe stages of involvement of the central nervous system diabetes leads to pain and motor paralysis, whereas pernicious anemia is characterized by spasticity and ataxia associated with subacute combined sclerosis. The changes in the central nervous system due to diabetes, even when pain and paralysis have been present for long periods, usually respond to diabetic treatment, and the patient can be promised recovery.¹¹ The spinal cord lesions of pernicious anemia, when paralysis has occurred on the other hand, improve but rarely return to normal, even with most intensive treatment. Furthermore, during the active stage of diabetic "neuritis" (that is, pain, paralysis of one or more extremities and absence of reflexes) an increase in the total protein of the spinal fluid is often present. Diarrhea is undoubtedly a much more frequent symptom of pernicious anemia than of diabetes, but it is by no means rare in the latter disease, occurring, however, commonly in cases with free hydrochloric acid in the stomach, whereas in pernicious anemia free hydrochloric acid is always absent. Atrophy of the tongue in diabetes frequently produces a typically smooth tongue, but a true glossitis with soreness is rare.

Both diabetes and pernicious anemia tend to produce variations in the lipid contents of the blood, dependent on the stage and severity of the disease. In severe or inadequately treated diabetes a great increase not only in cholesterol but also in lecithin, fatty acid and free fat of the blood occurs. Values as great as 500 to 800 mg of cholesterol per hundred cubic centimeters return to a normal of 220 mg or less, with improvement, and especially with treatment by means of insulin and a diet containing 100 Gm or more of carbohydrate. Bloor¹² noted that the low plasma cholesterol in pernicious anemia improved later. Muller¹³ studied the plasma lipoids of twenty-six cases of true pernicious anemia and eight doubtful cases and found that the abnormally low cholesterol values present during a relapse rose steadily with the onset of a remission. Lecithin values followed those of cholesterol. In a typical case the cholesterol varied between 60 and 70 mg per hundred cubic centimeters before remission, but on the thirteenth day after beginning liver treatment, it reached a normal value of 135 mg.

Claude Bernard¹⁴ first noted that the blood sugar rose in dogs after bleeding, but further observations on the blood sugar in anemia were not made for many years. The behavior of the blood sugar in pernicious anemia presents interesting variations. Johnson¹⁵ found in sixteen cases of pernicious anemia that the fasting blood sugar was above normal and that the blood sugar was higher the lower the hemoglobin. Goudsmit reports eight dextrose tolerance tests using 50 Gm of dextrose

in five typical and three atypical cases of pernicious anemia. In four of the five typical cases and in one of the atypical cases the blood sugar rose above 0.17 per cent. Riddle¹⁶ found a reduction in the fasting blood sugar of patients under treatment with liver extract during early remissions. He interpreted it as due not to an insulin-like substance in the extract but to a metabolic readjustment. Meulengracht and Iversen¹⁷ studied twelve cases of pernicious anemia and found that in severe relapse a high fasting blood sugar occurred as well as an elevated and prolonged blood sugar curve after the ingestion of dextrose. They concluded that these deviations depend more on the intoxication underlying the condition than on the degree of anemia.

Cases of anemia difficult to classify as true pernicious anemia are not rare in the diabetic clinic. Two patients have already been mentioned who, during the course of a severe infection, rapidly developed pronounced anemia, in one of whom hydrochloric acid was absent in the stomach in a single test. In routine examination of blood smears which were checked by an expert hematologist, three cases out of eight were recognized without any knowledge of the patient's condition as probably having achlorhydria, because of suspicious changes in the red blood cells. Mild degrees of anemia are not rare in diabetes, particularly if the diabetes is active and uncontrolled. One wonders whether the absence of anemia among diabetic patients years ago was due to the heavy diets of meat or whether the anemia was not noticed. The fact that under these conditions acidosis and concentration of the blood frequently develop tends to obscure the anemia and so to allow such cases to go unrecognized. Minot¹⁸ has discussed the existence of mild deficiency disorders in which, although a proper diet is fed, defective absorption or an abnormal gastro-intestinal function might result in mild symptoms. In the diabetic patient not only achlorhydria but also the existence of a dilatation and atony in the intestinal tract, especially of the colon as Dr L. B. Morrison has so often demonstrated as a result of the roentgenologic studies of patients, or of cholelithiasis, may contribute to a mild deficiency disorder expressing itself in mild anemia, neuritic paresthesias or more severe neuropathic states.

Chvostek¹⁹ regarded chronic pancreatitis as a distinct factor in producing anemia. He reported three cases in one of which there was diabetes, and discussed the literature with especial reference to hemochromatosis and cirrhosis of the liver and of the spleen. Conceivably, as a result of the interference with pancreatic function, a disturbance of the plasma lipoids might result in such concentration of hemolytic lipoids as to cause anemia. Another possibility dependent on pancreatic disease, which he considered, was that some hemolytic substance might be derived from the abnormal gastro-intestinal mucosa. However, the ordinary evidences of severe pancreatitis, such as fatty diarrhea, starch in the stools, and emaciation have not been noted in the cases here described.

TREATMENT

The results of treatment, by means of liver and insulin have been uniformly good in my patients. The causes of failure so far reported have been the advanced condition in which the treatment was begun,

11 Root H F, and Rogers M H. *New England J Med* 202 1049 (May 29) 1930.

12 Bloor W R. *J Biol Chem* 25 577 (July) 1916.

13 Muller G L. *Am J M Sc* 179 316 (March) 1930.

14 Bernard Claude. *Leçons sur le diabète et la glycogénose animale* 1877.

15 Johnson. *Acta med. scandinav* 1922 supp 3.

16 Riddle M C. *Ann Int Med* 3 1097 (May) 1930.

17 Meulengracht E, and Iversen Paul. *Deutsches Arch f klin Med* 148 1 (July) 1925.

18 Minot G R. *Ann Int Med* 3 216 (Sept) 1929.

19 Chvostek. *Wien klin Wchnschr* 5 121 1918.

the presence of severe complications or, in Wright's case, the development of polycythemia under treatment Tillgren²⁰ had two deaths, one from diabetic gangrene and one from tuberculosis. Varga²¹ reported good results consisting of improved appetite and strength in the treatment of pernicious anemia with insulin. Since the report of Blotner and Murphy²² of the effect of feeding liver on the blood sugar, it has been hoped that diabetes could be treated in this way. However, Bowen²³ reports a case of combined pernicious anemia and diabetes in which no benefit was observed from the use of liver in controlling the diabetes, and in my cases of combined pernicious anemia and diabetes I could not prove that the liver reduced the insulin requirement. In fact, patient 10 during three months' observation on a diet in which the carbohydrate was gradually increased from 145 to 165 Gm increased his insulin dose from 20 to 40 units. Patient 5, during three months' treatment in the hospital, received daily 300 Gm of liver, half the amount raw and half the amount cooked. In spite of the improvement in symptoms of the central nervous system, no reduction in insulin requirement or lowering of his average blood sugar level was noted. However, it must be admitted that careful studies of this point were not made. The diet which was prescribed during the period in which he gained steadily and which is typical for the other cases in this group, is given in table 5.

TABLE 5—Diet of Patient 5*

Egg 1	20% cream 180
Meat 60 Gm	Shredded Wheat ½
Liver 300 Gm	Grapefruit 200
5% vegetables 500	Orange 200 Gm
Unedas 2	Peach 165
Butter 5	Apple 165
	Liver extract 2 vials (Lilly)
Carbohydrate	133 Gm
Protein	99 Gm
Fat	78 Gm
Calories	1 630

* The patient was a man aged 57. March 1 1929. He weighed 131 pounds (59 kg). Insulin 10 units was given. The fasting blood sugar was 0.22 per cent.

In view of Muller's observations one cannot help but ask whether a low fat diet is proper in treating pernicious anemia and diabetes. Largely as the result of suggestions from Dr. George R. Minot, my patients have received diets planned to contain liberal amounts of vitamins. Thus, not only the vegetables, such as lettuce and carrots, and fruits, such as oranges, lemons, raisins and apricots, but also cod liver oil and yeast concentrate have been used.

The insulin dosage for the cases of combined diabetes and pernicious anemia in the Deaconess Hospital has varied from 5 units to a maximum of 42 units daily. No insulin reactions have occurred and no instance of insulin resistance has been observed.

SUMMARY AND CONCLUSIONS

1. A series of forty-eight cases of combined diabetes mellitus and pernicious anemia, including seven autopsies, was observed.

2. The symptoms of diabetes preceded the symptoms of anemia in the great majority of cases.

3. Factors predisposing to a more frequent combination of the two diseases are the greater duration of life

brought about by improved treatment of each disease and greater interest in diagnosis.

4. Achlorhydria, which is frequent in diabetes and becomes more frequent with increasing age, may be an etiologic factor. Gastric analysis and examination of the blood for evidences of anemia should be performed on all diabetic patients and particularly searched for in cases of long duration.

5. Treatment by means of insulin, liver or a potent substitute, and a diet rich in vitamins gives good results.
81 Bay State Road

ANTIPOLIOMYELITIS HORSE SERUM

ITS PREPARATION AND USE*

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In 1910, Flexner¹ reported an attempt to produce an immune horse serum against poliomyelitis as follows:

It has, for instance, been found that the horse does not readily respond even to large injections of filtrates carrying the active virus with the development of immunity principles within the blood. It is true that our experiments are restricted to a single horse for the present, the blood serum of which, after many months of treatment, had no restraining effect on the virus either in vitro or within the body.

It is a known fact that not every horse responds readily with the production of immunity substances alike to every kind of antigen, so that several horses must be tried. This one experiment, therefore, did not discourage me. Then, again, another method might lead to success when this failed.

With this view in mind I enlisted the cooperation of Dr. Banzhaf, one of the assistant directors of the Research Laboratories of the Department of Health of the City of New York, who henceforth collaborated with me in all this work and is equally entitled to all the credit or the blame.

In August, 1916, we² began to inject a horse with trypsinized filtrates of cord and brain suspension of children that died of poliomyelitis. After twenty injections, we decided to continue with subcutaneous injections of 5 per cent suspensions containing the live virus without any trypsin and this method we have pursued throughout our entire work for nearly thirteen years. Brains and cords of monkeys that were successfully infected with poliomyelitis were used whenever human material was unobtainable.

The serum of this horse protected one monkey completely from an intracerebral inoculation of 0.5 cc of a 5 per cent suspension of a very potent virus. This animal received nine daily injections of the serum, 3 cc intraspinally and 17 cc intramuscularly. Two monkeys were protected from intracerebral injections of a mixture of one part of virus suspension and two of the serum. The controls came down promptly with poliomyelitis and died. Their brain and cord presented the characteristic pathologic changes of the disease.

Thus we had good reason to believe that we had a horse serum that contained immunity substances sufficient to protect the animal by the restraining effect on the virus in vitro as well as in the body. By continued

20. Tillgren, J. *Acta med. scandinav.* 1930, supp. 34, p. 86.
21. Varga, J. *Paris med.* 2, 249 (Sept. 21) 1929; abstr. *J. A. M. A.* 93: 1844 (Dec. 7) 1929.
22. Blotner, Harry, and Murphy, W. P. Effect of Liver on Blood Sugar Level. *J. A. M. A.* 92: 1332 (April 20) 1929.
23. Bowen, B. D. Comparative Effect of Liver and Liver Extract on Diabetes in a Case of Combined Pernicious Anemia and Diabetes. *J. A. M. A.* 95: 30 (July 5) 1930.

* Read before the Medical Society of the County of New York, Academy of Medicine, Nov. 24, 1930.

1. Flexner, Simon. The Contribution of Experimental to Human Poliomyelitis. *J. A. M. A.* 57: 1105 (Sept. 2) 1910.

2. Neustaedter, Marcus, and Banzhaf, E. J. An Antiserum to Horse Serum. *J. A. M. A.* 68: 1531 (May 26) 1917.

injections we were able to obtain a serum from this horse that neutralized virus *in vitro* in the proportion of two parts of virus and one of serum. Encouraged by these results we continued our work during the following thirteen years by inoculating three more horses with equally good results.

In 1918, a year after the publication of our work, August Pettit³ reported our work and continued it along our lines with a sheep at first and then with a horse. He reported that his serum neutralized one part of virus with two parts of serum.

In 1928, Dr. Park was prevailed on to work on the problem. Our horse, which had been injected for ten months with virus of brain and cord that was inadvertently preserved in an acid glycerin and later through animal experimentation discovered to be avirulent, was turned over to Dr. Park who found that the horse had no neutralizing value at that time. With a known virulent virus then our method of treatment of the horse was mapped out by Banzhaf. By continuing the injections of our horse a very potent serum was obtained, Banzhaf having succeeded in concentrating it sufficiently to neutralize over 100 parts of the poliomyelitis virus *in vitro*. It is, of course impossible to say how high the potency of our previous serums was, for we had no means to go on with our experiments in a more extensive manner. During the thirteen years of our work we were not able to procure monkeys in sufficient numbers to work on the problem in a manner extensive enough to test out every possible phase.

Clinically, the most gratifying results should be obtained in the preparalytic stage of the disease. With the ordinary methods of diagnosis at present in vogue one cannot be even reasonably certain of a correct diagnosis at this stage, it is guesswork at best even during an epidemic. In sporadic cases it is certainly impossible to diagnose poliomyelitis in the preparalytic stage. At this point I want to reiterate that the complement fixation of the spinal fluid of frank or suspected cases of poliomyelitis with our antigen is the only available means at present that is helpful in the diagnosis. In 1917 we⁴ published the first results of our work on complement fixation with the specific antigen in acute poliomyelitis sufficiently gratifying to warrant the continuation of the work. It was done in collaboration with Miss M. A. Wilson of the research laboratories and has been sufficiently corroborated by other technicians since then.

The criterion of the efficacy of the serum, however, can be tested in frankly paralytic cases only, and this was amply demonstrated by the French clinicians and to some extent by us as well. Our experience is limited to six frankly paralytic cases in which we obtained most gratifying results—four of our own and two of Netter in Paris, to whom we sent 500 cc. of our serum six years ago. I regret to say that in spite of the positive experimental evidence in the last thirteen years at the research laboratories of the department of health of this city under the auspices of its director, Dr. Park, no opportunity was afforded us to test the value of the serum clinically. There certainly appeared from time to time cases of poliomyelitis in the Willard Parker Hospital and the serum was there always at their disposal. It is as harmless as ordinary horse serum or, for that matter, as any other antitoxin, so that no

untoward effect could possibly be anticipated from it. It certainly is deplorable that the pioneer clinical work was left to Europe.

Pettit⁵ reports the successful use of the serum clinically in twenty-five cases with frank paralysis, Netter⁶ in twenty-two cases, Etienne⁷ in several, and Minet and Porez⁸ in four. Parouneix⁹ relieved a bulbar paralysis and further on mentions a case of Stroup Beneck with a total paralysis of all four extremities and one of Debre with a bulbar paralysis as promptly ameliorated by the serum. Abroad it is used as Pettit serum.

A word may be said about the possibility of improving cases of frank paralysis. The pathologic changes characteristic of poliomyelitis in the acute stage consist chiefly of a reactionary inflammation of the cerebrospinal axis and in a small number of cases, of the peripheral nerves also. There is a perivascular infiltration of the meningeal, pial and parenchymatous vessels with mononuclears, polymorphonuclears, endothelial cells and plasma cells, together with a neuronophagocytosis. Edema is an early accompaniment. These changes may be slight and yet may produce extensive pareses. They may be regressive and the paralyses will disappear, as in some reported spontaneous recoveries, or they may become progressive and enhance degenerative changes of the nerve elements involved, producing permanent paralyses that defy all treatment. For this reason it is advisable to administer the serum in all cases, since it is clinically impossible to ascertain to what extent degenerative changes have set in. Of course, the earlier the serum is administered the better, and the ideal to be approached is to use it in the preparalytic stage, if and when a diagnosis can be made with any degree of certainty. Patients with a frank paralysis who still have fever should be treated. We know that some cases continue to improve even as late as up to two years.

As a further proof of the tenability of my theory may be cited a report of Netter⁹ on the use of human convalescent serum in frankly paralytic cases. In 1910 he used the serum in a case of the Landry type with complete success, beginning the treatment forty hours after the onset of the paralysis, again in 1913 he reported a case of the Landry type beginning treatment fifty hours after the onset of the paralysis and continuing without pause. He not only arrested the progress but also produced a complete disappearance of a paraplegia with retention. In 1914 he reported a case of bulbar paralysis with strabismus, a facial paralysis and hemiplegia, treated with the human serum with a resulting complete recovery. In a later communication he cited Zingher's nine cases in 1916, Macnamara's (Melbourne) three cases and Marinresco's bulbar cases with complete recovery. Interesting are Salamer's three cases, reported by Netter, in each of which the paralyses appeared in saccades successively some days apart. In these patients the serum was used six or eight days after the onset with success.

METHOD OF HORSE SERUM THERAPY

The immediate effect of the administration of the serum in the monkey is not closely analogous to that in man, particularly when injected intraspinally. The monkey apparently stands the serum well when it is

⁵ Pettit August Bull. gen. de therap. 176:389 (1925).

⁶ Netter Arnold Serotherapie dans le malade de Heine Med. Paris Masson & Co. 1928 p. 11.

⁷ Etienne cited by Netter (footnote 6).

⁸ Minet, Jean and Porez Echo med. du nord 31:575 (Oct. 29) 1927.

⁹ Cited by Pettit (footnote 5).

³ Pettit August Compt. rend. Soc. biol. 1918 p. 1087.

⁴ Neustadter, Marcus and Banzhaf E. J. Complement Fixation with a Specific Antigen in Acute Poliomyelitis J. Infect. Dis. 21:514 (Nov.) 1917.

injected daily intraspinally and intramuscularly at the same time. In man, however, intraspinal injections invariably produce violent reactions, characterized by a rapid rise of temperature up to 104 or 106 F., and at times even convulsions and coma. Pettit and others report similar experiences. The intravenous and intramuscular routes are practically devoid of any unpleasant effects if properly checked and are just as effective. The safest method to forestall an anaphylactic reaction is to inject the patient with one-fourth grain (16 mg.) of morphine and one one-hundredth grain (0.6 mg.) of atropine sulphate, and after several minutes to inject a few minims of the serum subcutaneously. If after ten minutes no reaction appears, it is safe to proceed with the intravenous or intramuscular injection of the serum.

The dose of the native (unconcentrated) serum for adults is from 20 to 30 cc. every twenty-four hours or on alternate days, depending on the severity of the case, the dose for children is, of course, less according to age. In a very severe case I have given 20 cc. intravenously twice in twenty-four hours with gratifying results. The dose may be continued daily until the temperature drops to normal, or longer when necessary until ten injections have been given. A Herxheimer reaction is the indication of the limit of safety. The combination of an intravenous and an intramuscular injection is advisable in the first two or three days in particularly severe cases. The concentrated serum can be given in 5 cc. doses. Intramuscularly it produces a Herxheimer reaction after the third dose, it seems to be better tolerated intravenously. Since it is possible to go further clinically with the native serum before a Herxheimer reaction is apt to set in, I prefer this to the concentrated. In my experience and that of foreign investigators, the intravenous and intramuscular routes are devoid of unpleasant reactions and yield gratifying results, so that the intraspinal method has been abandoned.

At this point I want to report an interesting case of poliomyelitis treated with the serum, because it is rather the unusual type.

F. L., a boy, aged 16, developed fever, Aug. 20, 1928. The following day the throat became congested and he vomited several times. In addition there were headache and general malaise. The temperature which was not over 102 F., began to recede on the fourth day. Then weakness, pain and a tremor set in the right arm, so that he had to hold it in a sling. The tremor ceased after a few days but the arm grew constantly weaker and all the muscles of the right upper extremity and shoulder as well as of the scapula began to waste. He stated that he lost 15 pounds (6.8 Kg.) in two weeks.

November 3, when I first saw him, he presented the following symptoms. There was a fair degree of paresis in the entire upper right extremity and shoulder. He was unable to raise the arm or to resist passive motion to any appreciable extent, especially on flexion. All muscles of the right upper extremity, chest, shoulder and scapula were considerably atrophied and exhibited a partial reaction of degeneration. In spite of the fact that he still complained of pain, no tenderness could be elicited on pressure along the course of the peripheral nerves and the pin prick was felt equally well on the two sides. His temperature was then 100.2 F. by mouth. The pupils were rather sluggish to light but prompt to accommodation and in convergence. Otherwise he was neurologically normal.

Under usual precautions he received four daily intramuscular injections of 15 cc. of the native serum. The temperature became normal after the third dose. After the fourth dose the motor power of the forearm began to improve. The

following day he developed slight serum sickness, so no other serum treatment was instituted. The Herxheimer reaction was accompanied by a slight elevation of temperature, which promptly subsided under the influence of atropine.

Mild galvanism and massage three times weekly were then instituted and the boy continued to improve unremittently. The electrical response to faradic current was equal to that of the left arm. I discharged him as completely recovered in January 1929.

There is no doubt that the case was one of poliomyelitis involving not only the anterior horns of the cord but the posterior roots and ganglions as well and ran a subacute course with elevation of temperature. The prompt cessation of the continued wasting and decline of the motor power and the return of the temperature to normal after the treatment with the serum entitle me to assume that it was decidedly beneficial in this case.

SUMMARY AND CONCLUSIONS

The efficacy of our antipoliomyelitis horse serum and that of Pettit of Paris, who followed our method, was shown in more than sixty cases of frankly paralytic cases of poliomyelitis.

The earlier a case is diagnosed the better will be the result of the serum, if given early.

Cases presenting a chronic course with elevation of temperature should be afforded the benefit of the serum, which is as harmless as any other antitoxin. It can be standardized and obtained in large quantities and is always available.

27 East Ninety-Third Street

TRANSFUSION DONORS AS SOURCES OF IMMUNE SERUM FOR TREAT- MENT OF POLIOMYELITIS*

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Since human immune serum is the only available substance having a generally recognized specific therapeutic effect in poliomyelitis and since to be effective it must be used early in the disease, it is of the greatest importance that adequate supplies of serum, preferably of known neutralizing value, be on hand, or at least that potential donors of such serum be quickly available. Every one who has dealt with the problem in the presence of an epidemic is familiar with the considerable difficulties in satisfactorily solving it. The majority of cases of poliomyelitis occur in children, many of them so young that only small amounts of blood can be obtained from each even as late as two years after convalescence. Hence, as a rule where pools of convalescent serum are kept on hand they are made up of small samples from various sources. As the basis for such practice it is assumed that nearly all convalescents from poliomyelitis carry the specific viricidal substances in their serums.

In a recent contribution Shroughness, Harmon and Gordon have shown how far short of the truth such an assumption may be. In only four out of seven persons who had been attacked by the disease from six months to two years before the test did the serum neutralize poliomyelitis virus. Such observations are in

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harmony with earlier ones of Netter and Levaditi,² Taylor,³ and others Aycock and Kramer⁴ in sixty tests with forty-one samples of convalescent serum, of which twenty-four were pooled lots from three or four individuals, had five failures. It is impossible to tell from their figures what proportion of convalescents were not immune, since most of the samples were pooled, but two of the individual samples and one pooled sample from three individuals failed to neutralize.

Shaughnessy and his associates confirmed and extended the earlier observations of Anderson and Frost,⁵ Peabody,⁶ Draper and Dochez⁷ and others that the serums of "normal" persons without history of previous attacks of poliomyelitis may contain immune bodies. They found that the serums of thirteen out of fifteen (87 per cent) such persons over 2 years of age were capable of neutralizing virus eleven of them in serum dilutions of 1:30 and two of them possibly in dilutions of 1:200. Eight out of nine persons 12 years of age or over gave positive neutralizing tests and the two highest titers in the entire series occurred in normal adults. Aycock and Kramer furnished the most exhaustive statistics on

of the fact that poliomyelitis occurs nearly every year in epidemic form somewhere or other. First, since the serum of convalescents from the disease does not always possess viricidal properties, it is highly desirable to have all samples tested for such properties before they are used therapeutically. This is by no means as difficult in practice as appears to be generally thought. A laboratory equipped to handle monkeys and having a stock of standard virus can make such tests. The expense, with monkeys at about \$15 apiece, is of course considerable, but it is not prohibitive. The testing might be considered a public responsibility and be carried out by the laboratories of state or municipal boards of health or, if done by private institutions, be paid for out of public funds. The cost can be reduced if donors capable of giving considerable amounts of blood repeatedly can be found, and this is the second point to be discussed.

It occurred to me that, since many normal adults possess viricidal substance in the blood, transfusion donors may in many cases prove to be suitable and convenient sources of therapeutic serum. If this is true, neutralization tests on listed donors could be made. Immunes detected, their blood obtained for stocks of

Neutralization Tests*

Control Serums		Human Serums Tested†			
Normal Monkey	Convalescent Monkey 176	Jo	Da	Pa	Bu
Monkey 227	Monkey 228	Monkey 225	Monkey 224	Monkey 225	Monkey 226
7/23 slight tremors excitable 7/24 tremors more marked paralysis of both arms partial paralysis of legs 7/29 gaining strength, 8/15 recovered except for residual paralysis saved for convalescent serum	No evidence of poliomyelitis within a month	No evidence of poliomyelitis within a month	7/23 tremors and excitable 7/24 flaccid paralysis both legs 7/25 paralysis has extended to both arms killed for virus material	No evidence of poliomyelitis within a month	No evidence of poliomyelitis within a month

* Results of tests for viricidal antibodies on the serums of four normal human adults. A weighed quantity of glycerinated cord and medulla of a poliomyelitis monkey 211 was ground in the presence of carefully washed sterile sand for one hour in a Schultz-Banham grinder (Schultz E. W. and Banham F. D. Description of a New Mechanical Disintegrator. *Am. J. Pub. Health* 20:771 [July] 1930) and made up as a 5 per cent suspension in physiologic solution of sodium chloride. A portion of this suspension was lightly centrifuged for ten minutes and then filtered through coarse sterile filter paper. The filtrate was distributed in 1 cc amounts to a series of serologic tubes. To these tubes the various serums to be tested were added in 1 cc amounts giving a final serum dilution of 1:1. The mixtures were incubated at 37.5°C in a water bath for two hours and injected intracerebrally into *Macacus rhesus* monkeys each monkey receiving 1.5 cc of the serum-virus mixture. The injections were all made July 15, 1930.

† These serums were later retested with the same results indicated in the table.

the point. In forty-six normal individuals of urban residence, thirty-two, or 70 per cent, neutralized virus and of the thirty-four who were aged 5 years or older twenty-seven, or 86 per cent, neutralized. The neutralization of serums from individuals in rural communities was much lower. In a separate study⁷ of twenty-one adults from a Southern city, eighteen, or 86 per cent, neutralized virus.

Two practical applications which logically follow these experimental observations would appear to deserve the attention of the medical profession, in view

serum, and the problem of finding adequate, quickly available supplies for treatment would be solved. A list of donors for direct transfusion would be at hand if that procedure were desired in unusually severe cases.

To determine the practicability of the hypothesis blood samples from four of the donors on the list of Stanford University School of Medicine were obtained and tested for viricidal value by Dr. E. W. Schultz, professor of bacteriology, who determined that three of the four serums possessed protective value and the fourth, none.⁸ The details of his tests are shown in the accompanying table.

One of the donors belongs to group I, and two belong to group II of the Moss classification. In future tests we hope to find immune donors of the other two groups, and also to titrate the neutralizing values of the serum of our immune donors so as to be

2 Netter A. and Levaditi C. Action microbicide exercée sur le virus de la poliomyélite aiguë par le serum des sujets antérieurement atteints de paralysie infantile. Sa constatation dans le serum d'un sujet qui a présenté une forme abortive. *Compt. rend. Soc. de biol.* 68:855 (May 21) 1910.

3 Taylor H. D. Blood Counts in Experimental Poliomyelitis in the Monkey. *J. Exper. Med.* 29:97 1919.

4 Aycock W. L. and Kramer S. D. Immunity to Poliomyelitis in Normal Individuals in Urban and Rural Communities as Indicated by the Neutralization Test. *J. Prev. Med.* 4:189 (May) 1930.

5 Anderson J. F. and Frost W. H. Abortive Cases of Poliomyelitis. An Experimental Demonstration of Specific Immune Bodies in Their Blood Serum. *J. A. M. A.* 56:663 (March 4) 1911.

6 Peabody F. W., Draper G. and Dochez A. R. A Clinical Study of Acute Poliomyelitis. Monograph 4. Rockefeller Institute for Medical Research. June 24, 1912. pp. 15, 18.

7 Aycock W. L. and Kramer S. D. Immunity to Poliomyelitis in a Southern Population as Shown by the Neutralization Test. *J. Prev. Med.* 4:201 (May) 1930.

8 Since the manuscript of this report was submitted to THE JOURNAL Professor Schultz has tested the serums of nine more of our transfusion donors and found seven of them immune. Thus ten of thirteen (77 per cent) are immune which is in fairly close agreement with the other series cited in the text. One serum neutralized in 1:60 dilution. In the recent California epidemic our immune donors supplied more than 5 liters of blood for treatment, in a few cases by transfusion.

able to select for therapeutic purposes those having the highest concentration of antibodies

As the result of the tests made on these four persons three potential donors of antipoliomyelitis serum of established value were found who can on a moment's notice furnish sufficient blood or serum to treat a very considerable number of patients. This is an obvious gain over the present method of depending on pooled stocks or individual convalescents' blood of unknown value. It is highly probable that the antibody content of pooled serum is frequently lowered by the inclusion of samples of no value, and individual untested samples (or even pooled samples, as shown by Aycock and Kramer) may contain no antibodies at all.

The following suggestions are made:

1 It is advisable to test for viricidal properties those samples of human serum intended for the treatment of poliomyelitis. Pooled serums may have low or inadequate amounts of immune antibodies, owing to the inclusion of nonimmune serums and consequent dilution of the immune fractions. The tests, though expensive, are entirely practicable.

2 State or municipal boards of health might be charged with the duty of making such tests or of defraying the expenses when performed by such private agencies as properly equipped private research institutions.

3 Adult transfusion donors are frequently immune to poliomyelitis, and their blood, when tested and found to contain viricidal properties, forms an abundant and readily available source of serum for treatment. The testing of transfusion donors for such immune properties whenever and wherever possible is strongly urged.

4 The availability of transfusion donors for the treatment of poliomyelitis suggests the possibility of using large amounts of immune blood by direct transfusion in severe cases as a means of obtaining prompt and more thorough therapeutic action than is afforded by intramuscular or intrathecal injection.

THE EXTRACTION, DISTRIBUTION AND ACTION OF TESTICU- LAR HORMONES*

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Although experimental and clinical evidence as to the effects of castration, as well as numerous experimental transplantation studies, conclusively prove that the testes possess one or more endocrine functions, nevertheless the biochemical evidence for the extraction of a postulated hormone from testis tissue was not definitely established until recently. To be sure numerous claims have been made from time to time, only to be unconfirmed later.

Brown-Sequard¹ is credited with the preparation of the first extract. He prepared crude water extracts from dog and guinea-pig testes and claimed most remarkable effects from the subcutaneous administration of them on himself. He felt much improved in general, with greater capacity for physical and mental work and less need for laxatives. The general impression was that the subcutaneous injection of the product would prove beneficial in the treatment of the aged and of persons with neurasthenia. Later the

product was improved and stabilized by the use of glycerin as a preservative and by autoclaving or filtering through a porcelain filter. Nevertheless the product remained an exceedingly crude preparation containing numerous tissue constituents in much lower concentrations than in the fresh tissue. The dilution introduced in the mode of preparation was always at least tenfold. In the light of present knowledge it is doubtful whether the Brown-Sequard preparation could have contained a sufficient amount of the one hormone now recognized as stimulating the secondary sex characters and accessory gonads to have influenced such elements in the clinical observations made by him and others. Brown-Sequard himself never stated that his product influenced the secondary sex characters but that probably two physiologic effects could be expected from his preparation: first, a prompt diuretic action and secondly, but later that of "activating nutrition." He also emphasized the possibility of suggestion or idiosyncrasy being factors in his case and expressed his desire to have other physicians confirm his observations. In general it seems necessary to conclude that such confirmations have been so few and the negative results so numerous that at present Brown-Sequard's assertions are not taken seriously. The best partial laboratory confirmations of his statements were given by Zoth² and by Pregl,³ who by means of ergographic records on themselves as well as on others found that the glycerin Brown-Sequard preparations did increase muscular efficiency and delayed the onset of muscular fatigue. Proper controls on glycerin were made, but similar extracts prepared from other tissues than testes were not tried. Zoth and Pregl used preparations supplied by a commercial laboratory. Dixon⁴ reported that saline extracts from fresh testis tissue cause a fall in blood pressure and a slight stimulating action on involuntary muscles. It is obvious that the Brown-Sequard preparations used were extremely crude and it is not at all unlikely that some of the effects observed were due to vasodilatants that could easily have been obtained from other tissues as well. A specific hormone action certainly was not demonstrated.

Among those who reported influencing secondary sex characters by extracts similar to the Brown-Sequard preparations are Ancel and Bourn⁵ and Walker.⁶ The former prevented atrophy of the penis and seminal vesicles in castrated guinea-pigs with subcutaneous injections every two days, while the latter caused comb and wattle growth in hens by the injection of saline extracts from cockerels' testicles. The doses employed by these observers are very small as compared with present practice for it is now found necessary to inject daily the equivalent of at least 50 Gm. of testis tissue to cause a measurable comb growth in five days in capons.

Poehl's spermine was the next product for which remarkable therapeutic values were claimed. Although first discovered by Leeuwenhoek⁷ in 1678 rediscovered by Vauquelin in 1791 and then studied in more detail by Schreiner⁸ and by Ladenburg and Abel⁹ it was not

* From the Department of Physiological Chemistry, University of Chicago.
¹ Brown-Sequard, C. P. Arch. de ph. nat. norm. et path. 21: 61 (1859).

² d'Arsonval, A. Arch. de ph. nat. norm. et path. 20: 17 (1854).
³ Zoth, O. Kar. Arch. f. d. ges. Ph. 1 (1860) 62: 17.
⁴ Dixon, W. F. J. Physiol. 19: 419 (1906).
⁵ Pregl, F. Arch. f. d. ges. Ph. 1 (1860) 62: 17.
⁶ Dixon, W. F. J. Physiol. 19: 419 (1906).
⁷ Ancel, J. and Bourn, A. C. Arch. de ph. nat. norm. et path. 21: 61 (1859).
⁸ Walker, J. Proc. Roy. Soc. Lond. Ser. 2 11: 1 (1906).
⁹ Leeuwenhoek, J. Tr. Kon. Ak. 12: 10 (1678).
¹⁰ Schreiner, Ann. d. Chem. u. Phys. 184: 1 (1841).
¹¹ Ladenburg, A. and Abel, E. J. Ber. d. Chem. Ges. 21: 21 (1888).

until von Poehl¹¹ investigated it that its catalytic oxidative action was claimed, as a result of which it was introduced clinically. It is now known that spermine is widely distributed and that the claims as to its physiologic action have not been satisfactorily confirmed. Through the work of Rosenheim, Dudley and Starling¹² as well as the studies by Wrede,¹³ the structure of spermine is now known to be that of a symmetrical bis-aminopropylamine butane. Its synthesis demonstrates its formula to be $\text{NH}_2-(\text{CH}_2)_3-\text{NH}-(\text{CH}_2)_3-\text{NH}-(\text{CH}_2)_3-\text{NH}_2$. Spermine obviously does not fulfill the postulated characteristics as to distribution and physiologic action of a testis hormone.

Iscovesco¹⁴ studied the lipin fractions obtained from ovaries and testes and concluded that a certain fraction from the latter when injected in doses of 0.01 Gm per kilogram of body weight caused in the normal rabbit in from two to three months an hypertrophy of the testis and slightly higher weights for the kidney, thyroid and whole body as compared with controls while in man he observed "effects which could be interpreted as resulting from a similar stimulating action." He actually attempted to fractionate his material but his biologic basis for the detection of his potency is very unsatisfactory and unreliable.

Pezard¹⁵ was the first to use the capon as a test animal for the hormone affecting secondary sex characters and reported that when the equivalent of "one tenth of a cryptorchid hog testis" is injected twice weekly into an Orpington capon one observes a growth of comb, wattles and ear lobes as well as a more masculine behavior. As he did not describe his method of extraction he may have employed a suspension of testis tissue. His dosage also appears unusually low. The same is true of Ssentjurn,¹⁶ who reported that he retarded regression of comb size in capons by injection of the Locke's solution perfusates from bulls' testicles. He even states that by means of the Lichtgrun Manoiloff test one can determine the relative concentration of the active substance in the perfusate. This is extremely doubtful.

Korenchevsky and Carr¹⁷ reported that the injection of "testis emulsions" causes an increased nitrogen metabolism in "most dogs" and that an insulin-like action can be shown to be present in testis and kidney tissue extracts which lowers the nitrogen metabolism in thyroidectomized, normal and castrated rabbits. Their figures are by no means convincing.

The foregoing review of the work prior to 1926 on extracting the testicular hormone clearly shows that the experimenters either employed very crude modes of extraction or that the biologic response used was of extremely doubtful value. In most cases the experimenter not only attempted to interpret an exceedingly doubtful biologic response, but in addition he employed a crude product. The first report giving clear cut evidence of extracting and fractionating the hormone from testis tissue was given by L. C. McGee¹⁸ who repeatedly obtained a lipin fraction from bulls' testis

tissue which, when injected into brown Leghorn capons, produced marked growth of comb, wattles and ear lobes, and, when injected into the castrated guinea pig, prevented the usual atrophy of the seminal vesicles. Subsequently he, and Gallagher in collaboration with C. R. Moore and his students,¹⁹ showed that the same extracts previously standardized on the capon also correct the cytologic and other accessory gonadal changes observed in the castrated rat and guinea-pig. Independently Loewe and Voss,²⁰ using the regeneration of the seminal vesicle of the castrated mouse as a test, arrived at similar conclusions and also reported finding the same substance in adult male human urine. Subsequently Funk, Harrow and Lejwa²¹ also found the comb growth stimulating substance in urine and still later in testis tissue.²² The application of the mouse seminal vesicle regeneration test has also been independently carried out by Martins and Rocha e Silva.²³ These numerous confirmations, together with later reports by still others,²⁴ definitely establish a method for extracting from testis tissue at least one hormone which affects certain secondary sex characters in the capon and in the castrated mouse, rat and guinea pig.

EXTRACTION OF THE HORMONE

The method as devised by McGee, Gallagher and Koch¹⁸ is briefly as follows. The testes after being freed from epididymides and tunics, are finely hashed and extracted for three or four days at room temperature with from 3 to 4 volumes of 95 per cent alcohol. The alcoholic solution obtained is concentrated under diminished pressure until an aqueous emulsion or suspension of lipins is obtained. This is then repeatedly shaken with equal volumes of benzene and the combined benzene extracts again evaporated under diminished pressure. The resulting lipin mixture is next dissolved in acetone and cooled to 10° C. The clear acetone solution is separated from the inert precipitate and again evaporated under diminished pressure. The product thus obtained can be further purified by partition between hexane and various percentages of alcohol in water, resolution in ether, and shaking the ether solution with aqueous sodium bicarbonate, sodium hydroxide and acids. The final product can be made to be of an activity such that from 0.01 to 0.03 mg daily causes an appreciable comb growth in a capon in five days. One milligram of such an extract represents from 12 to 18 pounds of testis tissue. This low yield is not due to loss or destruction of a great amount of the substance in the process of purification but to the extremely low concentration of the hormone in testis tissue. To bring about a measurable comb growth response in five days in a brown Leghorn capon, the extract from 50 to 75 Gm of fresh tissue must be injected daily. It is because of this low concentration that the observations of earlier workers with amounts

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12. Rosenheim Otto. *Biochem J* 18 1253 1924. Dudley H W. Rosenheim Mary C and Rosenheim Otto. *Ibid* 18 1263 1924. Dudley H W. Rosenheim Otto and Starling W W. *Ibid* 20 1082 1926
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17. Korenchevsky V and Carr M. *Biochem J* 19 773 (April) 1925
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20. Loewe S and Voss H E. *Klin Wchnschr* 6 500 (March 17) 1927
21. Funk Casimir. Harrow Benjamin and Lejwa A. *Proc Soc. Exper Biol & Med* 26 325 (April) 1929. *Ibid* p 569
22. Funk Casimir. Harrow Benjamin and Lejwa A. *Am J Physiol* 92 440 (March) 1930
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25. Gallagher T F and Koch F C. *J Biol Chem* 84 495 (Nov.) 1929

equivalent to from a thousandth to a hundredth of our doses seem of doubtful value. The low yield has been a matter of considerable concern to this laboratory, but all attempts to improve it by reextraction or by acid alkaline or enzyme hydrolysis prior to extraction have not succeeded.

DISTRIBUTION OF THE TESTICULAR HORMONE

Every testis tissue thus far examined by this laboratory yields some activity. Hog and bull testes uniformly yield active extracts, but rams' testes vary considerably in their content, the yield usually being lower than from bull testes, and sometimes the results are negative. In the case of rams' testes the variation may be seasonal. Comparative studies on cattle testes indicate that the embryonic and calf tissues are richest in hormone content, with adult bulls somewhat less and old bulls least potent. No other bull tissue examined except epididymides yielded active preparations in the hands of Gallagher. Cows' ovaries also gave negative results in his hands.

As previously stated, Loewe and Voss and Funk, Harrow and Lejwa reported finding the hormone in adult human male urine. This laboratory has confirmed these observations. Funk, Harrow and Lejwa reported the daily rate of excretion as distinctly higher in mature than in old men. Wornick and Koch² find that the hormone is either absent or present in thus far undetectable amounts in the urine from boys under 10 years or from young calves under 2 years of age, while in the urines from adolescent boys or mature men the amount present is appreciable. It is present in approximately one-half the concentration found in bulls' testes. We have also found the comb growth stimulating hormone in the urine from mature (pregnant or nonpregnant) women in concentrations of the same order as in men's urine. The negative observations on boys' and calves' urine may possibly be interpreted as indicating that the hormone is not secreted as rapidly before puberty as later. It certainly is present in the embryonic and in the prepubertal testes but it does not appear to escape into the urine before puberty. The source of the hormone in women's urine remains to be determined. At the present writing our quantitative studies indicate that the normal adult man or woman is excreting an amount of hormone every twenty-four hours equivalent to approximately one pound of bulls' testis tissue. If these observations are correct and the source of the hormone in the case of the male is the testes only, it must be concluded that this tissue is elaborating the hormone at a relatively rapid rate. The hormone has also been found in blood²⁸ and in the male blossoms of the pussy willow.²⁹

MODE OF ADMINISTRATION OF THE HORMONE

In the experimental studies of this laboratory as well as in our cooperative investigations with the Whitman Laboratory and with Professor Moore in the department of zoology we have obtained the most uniform and successful responses from the subcutaneous or intramuscular injection of our preparations dissolved in olive oil. The same preparations when given by mouth with or without olive oil saponin or proteins led to irregular results even though ten times the injection dose was used. The material appears to be poorly

absorbed from the intestinal tract because an appreciable amount is found in the feces after such a feeding experiment.

CONCLUSIONS

Active preparations of a testis hormone have been concentrated to a fair degree of purity. The product acts best when injected subcutaneously or intramuscularly; the dose for action by mouth is at least ten times as high. The physiologic actions observed thus far are the effects on the secondary sex characters in the capon and the accessory gonads in the mouse, rat and guinea-pig. No claim can be made that the product also affects behavior, metabolism or "vigor." Whether these responses are due to other hormones or whether larger doses over longer periods of treatment are involved remains to be determined.

In the light of these results on animals, it is reasonable to expect that similar generalizations will hold with reference to man. Thus far there is no indication that this product can be of any value in restoring vigor to the aged or neurosthenic. However, if there is an indication for its use and if the dosage in man is comparable to that found in the capon, the daily injection for a 150 pound man would have to be an amount equivalent to at least 5 pounds of bulls' testes tissue or 2 gillons of normal male urine. If taken by mouth, the dose presumably would have to be much greater. These deductions, based on animal experimentation, indicate the probable fallacy of prescribing testis preparations to man. It must be recalled that most of the proprietary preparations now on the market are to be taken by mouth and that they simply are made up of the desiccated and defatted ram or bull testicles. In the defatting process, no doubt a considerable part of the trace of hormone originally present is removed and discarded. The recent report from this laboratory on a well known proprietary product confirms these statements.³⁰

ETHER HYPERGLYCEMIA

WITH SPECIAL REFERENCE TO HEPATIC DISEASES

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And

A M GEHRET, M D

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The occurrence of hyperglycemia during and following ether anesthesia is well known and is one of the physiologic phenomena associated with that state. It is one of the striking manifestations of the effect of ether on carbohydrate metabolism. Mekic and Miller¹ reported elevations of blood sugar following ether anesthesia of varying duration; the degree of elevation varied from 27 mg per hundred cubic centimeters in 30 minutes to 47 mg in 110 minutes, a rise of as much as 62 mg being noted in some patients after 60 minutes. The amount of increase bore no relation to the nature of the operative procedure, although it was greater in laparotomies than in extra-abdominal operations. Similar observations have been made by Mackay,² Ross and Davis, and many others, values as

26 Gallagher T F Am J Physiol 87 447 (Dec) 1928 Work
E B and Koch F C To be published
27 Womack L B and Koch F C To be published
28 Muto Chuki Acta med Kenjo 11 1 1928 Womack E B
and Koch F C To be published
29 Leewe S Vos H E Lange F and Spohr Endokrinologie
1 39 (Jan) 1928

[illegible]

high as 400 mg per hundred cubic centimeters having been observed in prolonged anesthesia in individuals with normal carbohydrate metabolism.

There are, in the main, two theories that have been advanced in explanation of ether hyperglycemia. Ross and Davis⁴ believe it to be due to depression of the internal secretory function of the pancreas (hypo-insulinism), a temporary disturbance analogous to diabetes mellitus. The similarity to diabetes extends also to disturbances of fat metabolism and acid-base equilibrium. Blood⁵ demonstrated an associated hypemia and acidosis, the ketonuria that follows ether anesthesia is a matter of common knowledge. Mahler⁶ reported a progressive rise in plasma cholesterol, roughly proportional to the quantity of ether administered. It was found that both hyperglycemia and hypercholesterolemia could be prevented by the administration of 10 units of insulin two hours prior to the induction of anesthesia.

The belief in pancreatic depression as the cause of ether hyperglycemia is not generally accepted. It is more probable that the rise in blood sugar is the result of increased hepatic glycogenolysis due either to the direct action of the anesthetic or to the increased hydrogen ion concentration associated with ether anesthesia. Investigations of phosphate metabolism are of great importance in this connection. Bolliger⁶ found that in dogs the serum inorganic phosphate concentration dropped from 4.0 to 2.6 mg per hundred cubic centimeters at the end of one hour of anesthesia and was 1.0 mg one hour after the anesthetic had been discontinued. This observation is identical with the investigations made following the administration of dextrose, epinephrine or insulin, and appears to be due to the increased utilization of dextrose induced by those agents. Such changes would suggest that anesthesia hyperglycemia, as in the case of epinephrine hyperglycemia, is dependent on increased hepatic glycogenolysis rather than on hypo-insulinism.

Potter⁷ found the inorganic phosphate of the serum to be increased in five of seven patients during anesthesia, and Stehle and Bourne⁸ making similar observations, suggest that the diminished alkali reserve and increased acidity may be due to a discharge of phosphoric acid from the muscles. Haldane, Wigglesworth and Woodrow⁹ showed that the rise which may occur in serum phosphate is probably due to excessive muscular exercise and pure asphyxia and is not related to alteration in carbohydrate metabolism. According to Bolliger,⁶ the drop in serum phosphate that normally occurs is not observed in depancreatized dogs, another indication of the importance of proper pancreatic function in the production of this phenomenon. By direct methods, a reduction in the glycogen content of the liver following ether anesthesia has been demonstrated by Macleod and Pearce¹⁰ and Rosenthal and Bourne¹¹ found that hepatic function was diminished after anes-

thesia. In view of these and similar observations, it appears likely that the hyperglycemia of ether anesthesia is a result of the liberation of dextrose from glycogen stored in the liver.

The appreciation of this phenomenon is of great practical importance in connection with the preoperative and operative management of patients with obvious or presumptive disturbance of hepatic function. Injury to the liver, whether caused by hepatic poisons, infection or extrahepatic obstruction with biliary stasis, is associated with a diminution in the ability of the liver to store glycogen and with a corresponding decrease in its glycogen content. This has been demonstrated in several ways by Markowitz,¹² Olmstead and Coulthard¹³ Brill and Fitz-Hugh,¹⁴ Kugelmann¹⁵ and Ravdin.¹⁶ Conversely the ability of the liver to withstand injury is to a certain degree dependent on its glycogen content. This has been demonstrated experimentally by Davis and Whipple¹⁷ Umber¹⁸ and Ravdin.¹⁶ It is evident therefore that the effect of ether, which depletes the hepatic glycogen reserve, on a liver already poor in glycogen, may be productive of serious consequences.

PRESENT INVESTIGATION

The present study consists of the determination of the venous blood sugar concentration at brief intervals during operation, under ether anesthesia, on eight

Venous Blood Sugar at Brief Intervals During Anesthesia with Rise per Ounce of Ether Administered in Each Case

Case	Condition	Icterus Index	Blood Sugar Mg Minutes of Anesthesia							Rise per Ounce
			0	10	20	30	40	50	60	
1	Cholecystitis									
2	Cholecystitis	5	70	63	73	65	80	50	14	0.7
3	Cholecystitis	60	1.0	1.5				200	.07	10
4	Cholecystitis	64	115	132	140	187	176		15	2.9
5	Cholecystitis	12	111		187	200		247	1.0	9.0
6	Cholecystitis	5	112	144	175		175		205	19
7	Cholecystitis	7	91	170	171	192	193	211		14
8	Cholecystitis	10	110	200	206	216	218			13
9	Cholecystitis	3	92	91				175	175	1.0
10	Gastric carcinoma	10	92	141	1.1			16.		12
11	Appendicitis	3	100	117	1.2					6
12	Lymphosarcoma involving pancreas	116	1.3	190	212	200				10
			1.0	143	172					5

patients with disease of the biliary tract and four patients with other conditions (pyonephrosis, subacute appendicitis, gastric carcinoma lymphosarcoma with pancreatic metastasis). The detailed observations are presented in the accompanying table.

The fasting blood sugar level was within normal limits (Folin-Wu) except in case 2 (chronic cholecystitis, pyelephlebitis, multiple liver abscesses 150 mg) and case 12 (retroperitoneal lymphosarcoma with pancreatic metastasis, 150 mg). Frank jaundice was present in three of the eight patients with disease of the

⁴ Blood W. R. Studies on Blood Fat Variations in the Blood Fat Under Approximately Normal Conditions. *J. Biol. Chem.* **19**, 1, 1914.

⁵ Mahler, Abraham. Blood Cholesterol During Ether Anesthesia. *J. Biol. Chem.* **69**, 633 (Aug.) 1926.

⁶ Bolliger, Adolph. Phosphate Metabolism as Related to Anesthesia. *J. Biol. Chem.* **69**, 721 (Aug.) 1926.

⁷ Potter, D. G. E. Changes in the Blood in Anesthesia. *Quart. J. Med.* **18**, 261 (April) 1925.

⁸ Stehle, R. L. and Bourne, Wesley. Concerning the Mechanism of Acidosis in Anesthesia. *J. Biol. Chem.* **60**, 17 (May) 1924.

⁹ Haldane, J. L. S., Wigglesworth, A. B. and Woodrow, C. E. The Effect of Reaction Changes on Human Carbohydrate and Oxygen Metabolism. *Proc. Roy. Soc. London, Series B*, **96**, 15 (1924) 1925.

¹⁰ Macleod, J. J. R. and Pearce, R. G. Studies in Experimental Cholelithiasis. *Am. J. Physiol.* **27**, 341 (1910) 1911.

¹¹ Rosenthal, S. M. and Bourne, Wesley. Effect of Anesthesia on Hepatic Function. *J. A. M. A.* **90**, 377 (Feb. 4) 1928.

¹² Markowitz, J. Glyconeogenesis. *Am. J. Physiol.* **74**, 22 (Sept.) 1925.

¹³ Olmstead, J. M. D. and Coulthard, H. S. An Attempt to Strike a Balance of Carbohydrate Metabolism at Time of Rapid Changes in Blood Sugar and Liver Glycogen. *Am. J. Physiol.* **83**, 513 (Jan.) 1928.

¹⁴ Brill, Selling (and Fitz-Hugh, Thomas Jr.) Cholelithiasis Due to Epinephrine in Hepatic Disease. *Arch. Surg.* **18**, 1803 (Apr.) 1929.

¹⁵ Kugelmann, Bernhard. Das Verhalten der Adrenalin Blutzuckerkurven bei Erkrankungen des Leberparenchyms. *Klin. Wchnschr.* **8**, 264 (Feb. 5) 1929.

¹⁶ Ravdin, I. S. Some Aspects of Carbohydrate Metabolism in Hepatic Disease. *J. A. M. A.* **93**, 1193 (Oct. 19) 1929.

¹⁷ Davis, A. C. and Whipple, G. H. Liver Regeneration Following Chloroform Injury, as Influenced by Various Diets. *Arch. Int. Med.* **23**, 711 (June) 1919.

¹⁸ Umber, F. Parenchymschutztherapie bei Leberkranken. *Med. Klin.* **23**, 1578 (Oct. 11) 1929.

iliary tract A point of striking interest and significance is the finding that in the jaundiced patients the rise in blood sugar per ounce of ether administered was 07, 47 and 39 mg, respectively, with an average rise of 29 mg per hundred cubic centimeters per ounce, whereas in the patients with latent or no icterus the rise was 90, 50, 84, 83 and 83 mg, respectively, the average rise being 76 mg per hundred cubic centimeters per ounce of ether. The average rise in the three patients without any biliary tract disease was 70 mg per hundred cubic centimeters per ounce of ether administered.

All the patients in this series made good postoperative recoveries with the exception of patient 1, who died eighteen hours after operation, the autopsy revealing extensive acute diffuse necrosis of the liver, no evidence of which had been noted at operation. From the standpoint of studies of hepatic function prior to operation, this patient differed in no respect from the others with frank icterus. Unfortunately, the epinephrine test was not performed. This might have revealed the deficient glycogen reserve of the liver in case 1, for, as is noted in the table, the blood sugar concentration remained practically unchanged during the period of anesthesia. All patients with biliary tract disease received the same preoperative treatment, including a diet high in carbohydrate with supplementary dextrose therapy. Their general condition was good during operation. The blood sugar level appeared to bear no relation to the nature of the surgical procedure or to the manipulation of individual organs during the course of the operation.

COMMENT

These observations emphasize the importance of the glycogen content of the liver in determining the operative risk in patients with hepatic disease. It is evident that the glycogenic function of the liver is impaired in patients with jaundice, even though the commonly employed tests of the carbohydrate metabolic function of the liver fail to reveal any significant disturbance. The fatal result in one case of this series illustrates the extreme difficulty of determining, preoperatively, the extent of hepatic insufficiency in this respect. So far as could be determined, this case differed in no essential from two others with higher grades of bilirubinemia, however, the failure of the blood sugar to rise under the influence of ether is sufficient indication of the fact that the hepatic glycogen content was extremely low and foreshadowed the eventual and inevitable outcome.

Although the individuals with biliary tract disease without frank jaundice exhibited a hyperglycemic response equal to that of patients without hepatic damage, it must be recalled that they received careful preoperative treatment designed to decrease biliary stasis, combat hepatic toxemia and increase the storage of glycogen in the liver. The fact cannot be too firmly stressed that all patients with disease of the biliary passages must be regarded as having some degree of hepatic injury. Because of the relatively great functional reserve and enormous regenerative capacity of the liver, this can rarely be demonstrated until it becomes advanced. However, even in the absence of jaundice, the added insult of ether anesthesia may be depleting an already diminished glycogen reserve, result in a stormy convalescence or a fatal issue. It is essential therefore that, so far as is possible, every effort be made to ensure an adequate hepatic glycogen content before operation on such patients.

SUMMARY AND CONCLUSIONS

The hyperglycemia associated with ether anesthesia is apparently due to increased hepatic glycogenolysis.

The average rise in blood sugar per ounce of ether administered was 29 mg per hundred cubic centimeters in a series of patients with frank icterus as compared with 76 mg in a series of patients with biliary tract disease without jaundice. Prior to operation, all had received a diet high in carbohydrate with supplementary dextrose therapy.

One patient, receiving 14 ounces of ether, failed to show any appreciable rise in blood sugar (07 mg per hundred cubic centimeters per ounce of ether) and died eighteen hours after operation. Autopsy revealed extensive acute diffuse necrosis of the liver which had not been present at the time of operation. Preoperative studies of liver function in this patient did not differ in any essential from those in the other jaundiced patients who exhibited definite although subnormal hyperglycemic responses and who made uneventful recoveries.

All patients with biliary tract disease should be regarded as having hepatic damage whether or not evidence of hepatic insufficiency is demonstrable.

2009 Pine Street

Clinical Notes, Suggestions and New Instruments

TULAREMIA FROM THE FOX SQUIRREL REPORT OF CASE

TOM KIRKWOOD, M.D., LAWRENCEVILLE, ILL.

As an evidence of the increasing distribution of *Bacterium tularensis* infection in animals, I am reporting a new animal host—the fox squirrel. According to a personal communication from Dr. Edward Francis, the case to be reported is the first traceable to that source.

Mrs. J. K., aged 28, a farmer's wife, whose past history and general examination were negative, skinned and dressed a fox squirrel, Aug. 18, 1929. She did not handle or come in contact with any other game on that date. There had been no other possible chance for exposure during the preceding month. She had not been bitten by any insect. She was in excellent health Aug. 18, and no signs of infection appeared until August 20, when she had a severe chill accompanied by head ache, brackache and nausea. This chill was followed by an illness that lasted for four weeks. During this time she had chills, sweats and severe headaches, she lost several pounds and was left in an exhausted condition. On the third day of the infection she noticed that the glands under the right arm were enlarging and she soon had much pain and tenderness in that region. A day or so later she discovered a small papule on the dorsum of the distal phalanx of the third finger of the right hand. As the disease progressed this papule ulcerated and showed all the characteristics usually found in the initial lesion of the ulceroglandular type of tularemia.

The patient was certain that she had "blood poisoning" when I first examined her, August 31. She had consulted another physician who was well acquainted with the symptoms of tularemia and who, suspecting that disease, had sent a specimen of blood to the state laboratory for the usual agglutination test. The report on this specimen was negative. As all the typical clinical signs associated with tularemia were present when I first examined this woman, another specimen of blood was sent to the laboratory. This sample, which was taken on the eleventh day of the disease, was also negative. Another specimen submitted on the seventeenth day showed a positive agglutination for *B. tularensis* but the report from the state laboratory, dated of September 9, did not give the titer. A blood specimen was next sent to the Hygienic Laboratory of the U. S. Public Health Service, Washington, D. C. The report from there

dated September 30 showed a positive agglutination for *B. tularensis* in a dilution on 1:280, confirming the report from the state laboratory.

Dr. Edward Francis in the personal communication already referred to, states that this is the second case that has come to his attention of tularemia traceable to a 'tree' squirrel. The first was contracted from a black squirrel in Kansas, in the latter part of November 1928. These cases show conclusively that the tree squirrels must be considered as one of the possible sources of *B. tularensis* infection. The fox squirrel is found in large numbers throughout various parts of the United States and from the standpoint of the hunter of small game, is one of the important game animals. The possibility of *B. tularensis* infection in those who kill and dress these animals must therefore be remembered.

West State Street

A CASE OF LEIOMYOSARCOMA OF THE STOMACH*

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CINCINNATI

A white man aged 50, a truck driver, was admitted to the medical service of the Cincinnati General Hospital March 26, 1930, complaining of chills and fever of five days duration. The chills had been occurring daily and were followed by profuse sweating. After the first rigor he experienced a severe pain in the left epigastrium. He felt a swelling there which had remained unchanged in size.

There had been no previous abdominal pain and no digestive disturbances other than occasional flatulence and eructation of sour material. The bowels were usually constipated. A penile lesion had been present twenty-five years before which was thought to be a chancre. When 10 years old he had chills and fever, which disappeared after the administration of quinine. He had received numerous intramuscular injections in the hips.

The patient was somewhat undernourished but did not appear acutely ill. There was a subicteric tint to the skin and sclerae. The pupils were unequal, were irregular and reacted sluggishly to light. The fundi were normal. There was no generalized lymphadenopathy. The heart and lungs were normal. The blood pressure was 98 systolic and 68 diastolic. There was some fullness in the left hypochondrium. A firm mass presenting a distinct edge and descending freely on inspiration was felt to extend four fingerbreadths below the left costal margin in the midclavicular line. The mass was somewhat tender and smooth save for a slight irregularity near its edge. It was thought to be an enlarged spleen. There was neither ascites nor detectable enlargement of the liver. The extremities and reflexes were normal.

A blood count showed 20,000 white cells with 89 per cent neutrophils, 6 per cent lymphocytes, 4 per cent large mononuclear and transitional cells and 1 per cent eosinophils. Red cells numbered 4,500,000 per cubic millimeter. The hemoglobin was 55 per cent (Dare). Some achromia was present, no malarial parasites were found. The urine was normal save for the presence of 1+ albumin. The blood Wassermann test was negative. Blood sugar was 105 mg, urea 13 mg, and uric acid 17 mg per hundred cubic centimeters. The serum bilirubin was not increased, 0.2 mg per hundred cubic centimeters induct (van den Bergh technique). The erythrocytic fragility was normal. The platelets numbered approximately 490,000 per cubic millimeter, reticulocytes 2 per cent.

Shortly after admission, the patient began to complain of sharp epigastric pain, nausea and vomiting. The temperature, which on admission was normal, rose to 103.2 F with a corresponding increase in the pulse rate.

A fluoroscopic examination of the gastrointestinal tract, much to our surprise, revealed the presence of a large irregular niche on the lesser curvature of the stomach, several inches above the pylorus, which Dr. H. G. Reineke interpreted as a subacutely perforating gastric ulcer and which he felt was related to the mass thought to be the spleen.

Exploratory laparotomy was performed by Dr. Malcolm Cook. A tumor mass was felt on the posterior wall of the stomach extending upward to the lesser curvature. As the lesser peritoneal sac was bulging, it seemed probable that perforation had occurred. Incision through the gastrosplenic omentum revealed a large amount of foul smelling pus which was drained. The spleen was found to be normal in size and consistency. Following the operation the patient's course was steadily downward, and death occurred four days later.

At necropsy, Dr. J. N. Patterson found several small ragged sinuses on the lower posterior wall of the stomach communicating with the lesser peritoneal sac, which contained a walled off abscess. The sinuses were traced further and found to lead into an irregular shaped cavity, resulting from necrosis of the posterior wall of the stomach. Along the lesser curvature near the pylorus, the gastric mucosa was thrown up into a large irregular mass in the center of which there was an ulcer 7 mm in diameter which communicated with the cavity in the posterior wall. The edges of the ulcer were found to consist of tumor tissue. There was an area of recent ulceration in the mucosa of the midportion of the posterior wall, which also communicated with the cavity. Microscopic examination of the tumor tissue proved it to be leiomyosarcoma involving the various layers of the stomach wall. A metastatic nodule approximately 5 cm in diameter was present on the anterior superior surface of the left lobe of the liver and a second 1 cm in diameter in the lower lobe of the right lung posteriorly.

This case is of interest because (1) leiomyosarcoma of the stomach is relatively infrequent, (2) the symptoms were apparently due to an abscess in the lesser peritoneal sac, (3) the mass present simulated an enlarged spleen and (4) the gastric lesion produced a niche roentgenologically which according to Alexander Moore, is very unusual with leiomyoma.

REFERRED PAIN IN A TRAUMATIC INTESTINAL RUPTURE

RICHARD JOSEPH WHITE, M.D., FORT WORTH, TEXAS

During the past ten years the incidence of jejunal ulcer following gastro-enterostomy has been studied intensively. Von Haberer in Europe and Lewisohn in America have been led by its alleged frequency to advocate extensive gastric resections for duodenal ulcer. This discussion has incidentally diffused much information about the symptoms of jejunal ulcer. It causes pain regularly below and to the left of the umbilicus. In view of this well established clinical observation, the following case is of interest.

E. L. N., a boy, aged 6 years, was brought Sept. 3, 1930, to the Cook Memorial Hospital. He had been knocked down and run over by a light automobile. He complained at once and continuously of pain in his stomach. Physical examination showed extensive abrasions and contusions. Lesions were scattered over the arms and legs, and there was a severe bruise about the right eye with a subconjunctival hemorrhage. There was no bleeding from the ears or mouth. The boy was apparently perfectly clear mentally. The lungs were clear and the heart sounds were normal. The pulse was 120 but of good quality. His color was good and his skin dry. The temperature was 100 F. There was no evidence of any fracture or dislocation. The boy was extremely restless, turning from his back to his abdomen and back again. He repeatedly placed his finger just below and to the outer side of the navel and said that he hurt only there. There was a band of contusion extending from the lower ribs on the left side downward and obliquely across the abdomen. The abdomen showed little rigidity. The liver dullness was not obliterated. There was no shifting dullness. Nothing was made out by rectal examination. The urine was clear, except for an occasional red cell and a few white cells. The red blood cells numbered 4,600,000, the hemoglobin was 75 per cent, the white blood cells numbered 19,800, with 68 per cent polymorphonuclears. Four hours later the hemoglobin was still 75 per cent. A flat plate of the abdomen showed no air above the liver.

The boy was in only moderate shock and though he could easily have suffered a severe intra-abdominal injury, the only complaint or physical sign that he had was a sharply localized

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pain just to the left and below the umbilicus. This is so frequent in jejunal ulcers that in upper intestinal injury came to mind. He was given no opiates and nothing by mouth and was examined hourly. He continued to point to the same spot as the site of pain. Four hours after the injury he vomited. Six hours after the accident his temperature was 102 and his pulse 130. He was mildly delirious and showed a slight abdominal rigidity. It was decided to open the abdomen. With procaine hydrochloride used locally, a small incision was made just to the left of the navel. A little thin clear yellowish fluid welled out. It was odorless and no fat necrosis or peritoneal irritation was made out. The patient was given ether and the incision lengthened. Considerable quantities of fluid issued from the wound, evidently containing some bile. The liver felt normal, the stomach, as far as could be seen, was not injured. As I reached toward the spleen, a gush of fluid came out and a few gas bubbles rose through it. The spleen felt normal. When the transverse colon was lifted up, the source of the trouble was obvious. At the beginning of the jejunum and extending up into the fossa of Treitz was a slightly oblique rent through the intestine, 1 inch long. The adjacent mesocolon and intestine for 2 inches about the tear were covered with thick fibrin. The hole was closed with two layers of chromic catgut. A smear of the free fluid showed no organisms. The abdomen was closed without drainage. The child's condition seemed bad at the close of the operation. The next morning he was greatly improved and had a rapid convalescence, marred only by a low grade infection in the abdominal fat.

It is interesting that a tear in the jejunum in the segment subject to ulceration following gastroenterostomy should have so accurately and conspicuously reproduced the referred pain of jejunal ulcer.

1212 North Street

ACUTE TOXIC NEPHRITIS COMPLICATING ACUTE OBSTRUCTION OF THE SMALL INTESTINE

N I FOX, M.D., F. J. MANTEL, M.D., AND J. I. RABENS, M.D.
CHICAGO

S. B., a Negro, aged 24, was admitted, April 14, 1930, to the surgical services of the Cook County Hospital, Chicago, because of a swelling in the right inguinal region, vomiting, and severe abdominal cramps for the past twenty-four hours.

The patient stated that he had had a right inguinal hernia for the past two years. The day before, about 2 p. m. he suddenly developed a sharp, colicky pain in the right inguinal region. An hour later he noticed a round, hard and tender mass in the same area. The pain was followed soon by nausea and vomiting, the vomitus consisting of food material and mucus. About 3 o'clock the pain had spread over the entire abdomen and was especially marked around the umbilicus.

He vomited again at 5 and at 6 a considerable amount of grayish material. He tried to go to sleep but was awakened again by the pain. He took a cathartic but had no results. He suffered pain all night and could not sleep. At 8 a. m. he vomited again, the vomitus this time consisted of thin, brownish, foul smelling material. The pain in the inguinal region was getting worse. He called a physician, who advised him to go to the hospital. His past history was negative except for yellow fever at 12 and mumps three years before admission. The family history was negative.

The patient was well developed and well nourished. His temperature was 97 F, respiration, 22, pulse, 88, blood pressure, 160 systolic and 106 diastolic.

Physical observations were essentially negative except for the right inguinal region. Here a hard round and tender mass about the size of a large walnut was noticed. This mass increased in size and transmitted a definite impulse to the hand on coughing. The mass was reduced after a little manipulation. This resulted in relief from pain.

Urinalysis revealed a dark amber fluid, with a specific gravity of 1.036, albumin 4 plus, sugar and acetone 0. Many granular and hyaline casts were found in an uncentrifuged specimen.

On account of the hypertension, vomiting and the condition of the urine, an acute nephritis with impending uraemia was

considered and the patient was transferred the same day to our medical service for observation.

April 15 we saw the patient and found him quite comfortable, not acutely ill. The vomiting did not recur. The pain in the right inguinal region and abdomen had disappeared since the reduction of the hernia. The blood pressure had come down to 140/78. The urine still showed albumin 2 plus with many hyaline and granular casts in a centrifuged specimen.

The further progress of the case was uneventful. The albumin and casts diminished from day to day, so that on April 19 the urine was free from albumin and casts. The blood pressure remained normal. The blood indican test was negative. The report of the chemical examination of the blood having been misplaced we cannot give exact figures.

A Mosenthal test, April 19, gave concentration, 1.006-1.018 and 1680 cc. secreted from 10 a. m. to 8 p. m.

A phenolsulphonphthalein test, April 22, gave first hour 15, second hour 20, total 35.

The patient was transferred back to the surgery, where a herniotomy was performed, April 28. He was discharged, May 7, 1930. His renal function throughout convalescence was normal.

COMMENT

For some time it was known that in certain cases of acute obstruction of the small intestine there is often present severe renal injury which may be the cause of death. McQuarrie and Whipple¹ in experimental study of intestinal obstruction in dogs proved conclusively that the renal function was definitely impaired. They found a decreased elimination of phenolsulphonphthalein and chlorides in the urine with increased concentration of urea and nonprotein nitrogen and pointed out the possible clinical importance of these observations.

Tucker² has called attention to the renal factor in the toxemia and death following gastroenterostomy. He believed uraemia to be the probable cause of death. In four of his cases necropsy revealed the grafting of an acute process on a previously existing chronic nephritis.

Tilston and Comfort³ have shown a marked increase in total nonprotein nitrogen and urea in the blood in cases of acute intestinal obstruction.

Brown, Lusterman, Hartman and Rowntree⁴ have shown that severe renal injury exists in many cases of duodenal and pyloric obstruction. This toxic injury to the kidneys is of grave consequence and is characterized by albuminuria and cylindruria, marked functional impairment of the kidneys associated with marked increase of total nonprotein nitrogen of creatinine and urea in the blood, and a definite decrease of phenolsulphonphthalein excretion, a clinical syndrome due in part at least to renal insufficiency, and a well defined pathologic picture of toxic nephritis.

We can interpret our case, then, as follows:

A loop of the small intestine was caught in the inguinal ring producing a strangulated hernia and intestinal obstruction. Absorption of toxins from the obstructed intestine resulted in an acute toxic nephritis as manifested by the sudden increase in blood pressure, albuminuria and casts. Reduction of the hernia restored the function of the small intestine. The acute symptoms such as hypertension and vomiting subsided, the urinary symptoms subsiding more slowly but eventually clearing up. The phenolsulphonphthalein output remained below normal a longer period.

This case is interesting because of the rapid development of toxic nephritis in a case of acute intestinal obstruction of less than twenty-four hours duration and just as rapid abatement of symptoms with the disappearance of the obstruction. The danger of kidney damage must be considered in hernias in which loops of the small intestine are involved.

185 North Wabash Avenue

1. McQuarrie, I. and Whipple, C. H. Renal Function in Intestinal Obstruction. *J. Exper. Med.* 28: 419 (April) 1917.

2. Tucker, W. J. Uremia Following Gastro-Enterostomy. *Arch. Int. Med.* 20: 478-479, 1922.

3. Tilston, W. and Comfort, C. W., Jr. The Total Amount of Nitrogen and the Urea of the Blood in Health and Disease. *J. Biol. Chem.* 11: 620-649 (Oct.) 1914.

4. Brown, C. F., Lusterman, G. B., Hartman, H. P. and Rowntree, L. Toxic Nephritis in Pyloric and Duodenal Obstruction. *Arch. Int. Med.* 32: 42-45 (Sept.) 1923.

A CONFIRMATORY PHYSICAL SIGN IN ASCITES

J THORNWELL WITHERSPOO MD NEW YORK

In cases of ascites when one side of the abdomen is tapped with the finger and the other side is auscultated, two sounds similar in timing to the normal heart sounds have been observed. The first sound is caused by the sound wave being transmitted through the fluid; the second is the result of the fluid wave crossing the abdomen and striking against the auscultated side. These two sounds are heard more clearly in thin, tense abdomens as opposed to flat soft flabby ones and are best heard at the level of the fluid and intestine as demonstrated by an experiment with a closed rubber bag partially filled with air and water. There seems to be no reference to this auscultatory sign in cases of ascites in any of the standard textbooks on physical diagnosis.

It is stated by several of the German writers that when fluid is injected into the abdomen of an adult cadaver, 1500 cc is necessary before any of the usual physical signs of ascites appear, such as distended abdomen, shifting dullness, and the fluid wave. These signs and the auscultatory sign were present in eighteen cases of ascites examined and confirmed by abdominal aspiration operation, or autopsy. The auscultatory sign could not be demonstrated in any cases in which these signs were absent nor was it noted in abdomens markedly distended with gas. However it was clearly heard in one case of a large ovarian cyst which was later removed at operation.

This observation is offered here only as an additional confirmatory sign in the detection and diagnosis of ascites.

St Luke's Hospital

TRAUMATIC ULNAR NEURITIS DUE TO STRAPPING OF THE ELBOW AND THE FOREARM TO THE OPERATING TABLE

L S GURDJIAN MD DETROIT

The ulnar nerve traversing the epicondylar groove of the humerus in a subcutaneous position is apt to be injured through changes either within itself or in the surrounding tissues. Scar tissue formation in the groove caused by bruises and small hemorrhages may compress this structure and thus irritate it. When one considers the fact that the ulnar nerve with each flexion-extension movement at the elbow moves half an inch or more, one realizes the ease with which changes in the groove through which it traverses may irritate and alter its functions. In the next few paragraphs I shall describe the case of a young man, aged 24, who was taken to the operating room for herniorrhaphy. The upper extremities were strapped to the table in the usual manner. Soon after the reaction from the anesthetic he noticed a peculiar feeling of numbness in the little and ring fingers of the right hand.

I saw the patient ten months after the operation. The feeling of numbness in the ulnar distribution of the hand had persisted along with progressive weakening of the grip to the extent that he was unable to use the hand to advantage in his vocation of plumbing.

Examination showed definite hypesthesia in the ulnar distribution of the hand, inability to approximate the little finger and the thumb, and marked atrophy of the adductor pollicis and the interosseous muscles. The rest of the neurologic examination was essentially irrelevant.

A diagnosis of traumatic ulnar neuritis was made, and the patient was advised to have the operation of ulnar transposition and neurolysis, if necessary. This was performed. The ulnar nerve was taken out of the epicondylar groove and transposed to the anterior aspect of the elbow. Adhesions were noted between the nerve and the surrounding tissues. Neurolysis was not found necessary. A few days after the operation the numbness in the ulnar distribution disappeared. Three months later the adductor pollicis was about the same size as its fellow on the opposite side. The grip was practically normal.

COMMENT

This case illustrates an ulnar neuritis caused by strapping the elbow and the forearm to the operating table. It is possible that during the administration of the anesthetic and the period

of excitement he bruised the inner aspect of the right elbow and the walls of the epicondylar groove, followed by scar tissue formation. With the narrowing of the ulnar canal the nerve became chronically irritated through compression and adhesions. This is substantiated by the operative observations already described and by the fact that the patient recovered complete function soon after the nerve was transposed from its normal bed.

It is not within the limits of this case report to discuss at length the causes, clinical manifestations and operative treatment of traumatic ulnar neuritis. Several excellent papers have been written on the subject.¹ Suffice it to say that it is important to recognize such lesions as early as possible and after a period of waiting if the function does not return to perform the operation of ulnar transposition and neurolysis, if necessary.

840 David Whitney Building

Special Article

THE INDISPENSABLE USES OF NARCOTICS

IN THE PRACTICE OF MEDICINE*

FREDERICK TICE, MD

CHICAGO

As a preliminary to the therapeutic employment of narcotics it is advisable or necessary to consider what is understood by the term narcotics and how they produce their beneficial effect. There is no generally accepted definition or classification of the narcotic drugs, except, perhaps, that they are included in a group producing varying effects on the nervous system. In this comparatively large group are found not only narcotics but also hypnotics, soporifics, anesthetics, analgesics, antispasmodics and several other subgroups, more or less closely related in several respects but with some distinguishing characteristic.

The physiologic effect of opium and its derivatives depends in part on the particular preparation that is employed, as well as on the amount of the drug. In general terms it may be said that small amounts produce an exciting effect while in larger doses there is an analgesic action and in sufficient dosage hypnosis, coma and even paralysis, particularly of the respiratory center. To these effects may be attributed the extensive therapeutic employment of opium and its derivatives. The analgesic property is so decisive as to constitute its chief characteristic.

For the relief of pain, morphine has no rival, and it is this distinguishing property that makes it indispensable in the practice of medicine. The decreased perception to pain is due to the almost elective effect on the pain perception centers of the cerebrum. Apparently these centers are widely distributed, perhaps in many or all the central areas. With this decreased or sus-

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*These articles are prepared under a plan of cooperation between the American Medical Association, the Committee on Drug Addiction of the Division of Medical Sciences of the National Research Council and the Division of Mental Hygiene of the United States Public Health Service. Their object is to reduce the legitimate use of addiction drugs to a minimum by replacement wherever possible with other remedies that will accomplish the desired result. The physicians of the United States are the essential group in any such attempt and it is hoped that these articles will be useful to them in their practice. The funds for this work have been donated to the National Research Council by the Bureau of Social Hygiene, Inc.

pendent function of the cerebral perception of pain, the function of the centers in the midbrain is abolished, while the reflex irritability of the cord remains practically unaffected. This analgesic effect is evident in comparatively small doses, much larger amounts being necessary to produce hypnosis.

The employment of opium for its hypnotic effect alone is open to question and is liable to severe criticism or even censure. With the almost innumerable newer hypnotics now available, there is little or no justification for the use of opium with its accompanying danger of dependence and habit formation. However, it must be said that the claims of some of the manufacturing chemists that particular preparations are proper substitutes for opium are grossly exaggerated and not justified by actual practice. This holds true particularly when relief of pain is desired, but occasionally after a faithful attempt to induce sleep with several or many of the usual hypnotics, recourse to some one of the opium derivatives becomes necessary.

With these preliminary considerations one may consider the various diseases in which the use of opium is indispensable. This is a most difficult task, as it is associated with the question of individual opinion and experience. That opium is indicated in certain diseases and is contraindicated in others, nearly all will admit, but as to its specific use there are many physicians whose opinions differ and the question remains in doubt.

It is safe to say that all will agree as to the indispensability of morphine in the hopeless cases of carcinoma, regardless of the primary site. In cases of inoperable or extensive carcinoma of the uterus, prostate, bowel, tongue, stomach or breast, with or without generalized metastasis, morphine is a gift of the gods and its judicious use in relieving pain constitutes one of the greatest services the physician can render. Not only is the patient relieved of pain but the euphoria that results is a blessing, and death, which otherwise might be almost intolerable, is made easy and comfortable.

In another group of diseases, accompanied by pain and designated by colic, morphine is the drug of choice. In this group may be included the cases with biliary, renal or lead colic. Some one of the general anesthetics, as chloroform or ether, may give the desired relief but not without the necessity of maintaining a more or less complete anesthesia to obtain muscular relaxation, with the probability of a return of the pain as soon as the drug is discontinued. Accompanying renal, hepatic, pulmonary or cardiac pathologic conditions may constitute a contraindication to the use of either of the mentioned anesthetics. Except in a few cases the use of morphine is considered only a palliative measure, as renal and biliary colic are essentially surgical, while the relief in lead colic will be required only for a comparatively short time.

The further discussion of the subject may best be accomplished by considering the various diseases according to the anatomic systems. Certain cardiovascular diseases, particularly those accompanied by pain, should be mentioned. Acute pericarditis, if the pain is severe may fail to respond to any therapeutic effort short of the administration of morphine hypodermically, to be repeated as required. Perhaps the rheumatic type, in the acute plastic stage, is the form most frequently accompanied by severe pain, although any type may belong in the group.

Difference of opinion may exist as to the necessity of employing morphine in the arteriospasmotic type of angina pectoris. While it is true that most of the cases will respond to some of the vasomotor drugs, there are instances requiring one or more doses of morphine. In the coronary occlusion type of angina, whether embolic, obliterative or thrombotic, morphine becomes imperative. In this type the anginoid attacks are prone to be severe and protracted, without much, if any, expectation of relief from the vasomotor dilators.

In the pleuropulmonary group, some of the diseases and symptoms will require consideration. Although acute plastic pleurisy, either primary or secondary to pulmonary disease, with its excruciating pain and dyspnea, responds to some extent to immobilization by adhesive straps and physical therapy, too often the desired relief is obtained only by single or repeated doses of morphine.

Acute spontaneous pneumothorax, accompanied by pain and dyspnea, requires temporary relief by morphine until other therapeutic measures can be employed.

In pulmonary diseases, certain symptoms may predominate and endanger life. Pulmonary hemorrhage from any cause, particularly the massive form accompanied by fear and anxiety, may be much relieved or benefited by a preliminary or repeated injection of morphine, this to be followed by the usual recognized therapeutic efforts, depending on the underlying pathologic condition. The dyspnea of far advanced pulmonary tuberculosis may well be classed with the hopeless cases of carcinoma, in which some relief and comfort may be had during the final days or hours. Much relief and comfort may be had in the dyspnea of primary or secondary cancer of the lung. The same is true in some cases of aneurysm compressing the trachea or a bronchus.

In the gastro-intestinal group, gastric and rectal carcinoma of the inoperable and hopeless type have already been considered. The pain in gastric and duodenal ulcers, when present, will usually respond to ulcer management and does not require special analgesics. In the event of perforation, the treatment is surgical but as a palliative measure a single or repeated hypodermic of morphine may be advantageous.

The bowel diseases, as acute enterocolitis, spastic and ulcerative colitis, diverticulitis, appendicitis and the various forms of dysentery, require their own individual form of therapy and rarely constitute a cause for special analgesics or opiates. Usually the cramps, pain and irregular bowel action in spastic colitis or a bowel management with tincture of belladonna will be relieved, but occasionally the cramps or a profuse diarrhea can be controlled only by doses of an opiate, preferably camphorated tincture of opium. If the diarrhea is the predominating complaint powdered opium may give the best results as the powder is more slowly absorbed in the intestinal tract. With the increased knowledge of the different types of dysentery there has necessarily been an improvement in the therapy. Many of the older drugs have been discarded. As in spastic colitis, when diarrhea is particularly pronounced and uncontrollable by other means powdered opium may be of service. Rectal tenesmus regardless of the cause can be best controlled or relieved by rectal suppositories containing powdered opium or morphine.

Of the remaining mentioned diseases appendicitis is surgical and often ulcerative colitis and diverticulitis also are best treated surgically. Rarely if ever, is an opiate required or justified.

Some mention should be made of typhoid and the former practice of prescribing morphine or opium in the treatment of complicating bowel hemorrhages. As the bleeding is usually due to the ulceration of the bowel, there is always the question of accompanying or developing perforation. When morphine or opium is prescribed, the symptoms and signs may be so modified as to make the differential determination more difficult or even impossible.

While the cerebrospinal group includes a considerable number of diseases only a small minority of them can justly claim the indispensable therapeutic use of opium or its derivatives. It is in the symptomatic treatment of the various psychoses, and in neuroses, psychoneuroses, hysteria and insomnia that the newer hypnotics are of such indispensable service. Even in the acute manias and in delirium tremens it is only after the bromides and chloral hydrate, paraldehyde and the newer hypnotics have failed that an opiate is permissible. It should be emphasized again that the employment of opium, or its derivatives, for their hypnotic effect alone is open to question.

As to the spinal diseases, special mention should be made of ribes dorsalis with tabetic crises and lightning pains. The use of morphine to relieve these conditions should be the last resort, as dependence and morphinism are easily produced. Epidural injections in combination with the usual syphilitic therapy have produced most gratifying results and it is only in rare instances that morphine is required.

Peripheral neuritis, local or multiple, is usually secondary to some primary pathologic condition. The neuritis may be of the alcoholic or arsenical type, perhaps due to a focal infection or a compression, as in spinal caries or a cervical rib. In each individual case the therapeutic efforts should be concentrated in an effort to relieve the primary cause.

The opium or codeine treatment of diabetes mellitus has no longer been in vogue since the advent of insulin, but, not infrequently, there is an associated diabetic neuritis. When the pains are severe and do not subside on diabetic therapy, occasional doses preferably of codeine or even of morphine may be required.

Coca leaves or the fluid extract have no justifiable therapeutic claims. The chief alkaloid, cocaine, owes its popularity to the marked local anesthetic effect produced when applied to mucous membranes or injected hypodermically. This anesthetic effect is due to the paralysis of the terminal sensory nerves or the vasomotor constriction which interferes with the nerve function.

With the advent of the newer local anesthetics, cocaine has lost much of its importance.

Formerly nausea and vomiting, with or without gastralgia, occurring in acute gastric conditions were indications for the use of cocaine, but now they are readily relieved by one of the nontoxic local anesthetics. The vomiting of pregnancy no longer is a justifiable cause for the use of cocaine, as the condition is relieved by the newer local anesthetics, dextrose intravenously or ovarian endocrines.

At one time cocaine, applied locally or by spraying, was a favorite means of giving relief in hay-fever and asthma, through its vasomotor effect on the mucous membranes. The same or better results may be had with ephedrine or epinephrine, completely displacing cocaine and the danger of habit formation.

25 East Washington Street

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS COY FORMS TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SET ON APPLICATION.

W. A. PICKVER, Secretary

NUPERCAINE CIBA — a butyloxycinchoninic acid, γ diethylethylenediamide hydrochloride — 2 butyloxycinchoninecarboxylic acid 4 diethylethylenediamide hydrochloride. $C_{26}H_{34}N_4O_4 \cdot 4HCl$ — The hydrochloride of the base γ butyloxycinchoninic acid γ diethylethylenediamide obtained by chlorination of a chlor cinchoninic acid chloride and conversion of the latter with asymmetric diethylethylenediamine into a chlor cinchoninic acid diethylethylenediamine and subsequent heating with sodium butyrate. Nupercaine was first introduced as pericaine.

Actions and Uses—Nupercaine is a local anesthetic acting like cocaine when applied to mucous surfaces and like procaine or cocaine when injected, the action being relatively prolonged. Nupercaine is about five times as toxic as cocaine when it is injected intravenously into animals, and its anesthetic activity is correspondingly greater than that of cocaine when it is applied to a mucous surface. It is many times more active than procaine hydrochloride when it is injected subcutaneously. It is reported to have caused necrosis of tissue in one case and a condition resembling gangrene with recovery in another. Death has been reported after the subcutaneous injection of 135 cc of a solution of 1 in 1000. Weak solutions (1 in 2000) cause slight temporary vascular dilatation (avoided by the addition of epinephrine hydrochloride) followed by constriction. The usual precautions should be observed when it is injected into the spinal canal or into the urethra.

Dosage—For infiltration anesthesia solutions of from 1 in 2000 to 1 in 1000 with the addition of 0.1 cc of epinephrine hydrochloride solution to 100 cc of the solution. Not more than 100 cc of 1 in 1000 solution should be injected. For spinal anesthesia a total of from 7.5 to 10 mg ($\frac{3}{4}$ to $\frac{1}{2}$ grain) in 1 in 200 solution for sacral anesthesia, 25 to 35 cc (about 1 fluid ounce) of 1 in 1000 solution or a correspondingly smaller volume of 1 in 500 solution. The details of dosage should be learned with reference to various modifications for different applications. Aqueous solutions of nupercaine should be prepared with distilled water, as the salts present in tap water of many localities may precipitate the free base butyloxycinchoninic acid diethylethylenediamide. Alkali-free glass should be used in the preparation of its solutions.

Manufactured by the Society of Chemical Industry in Basle, Switzerland (Ciba Company, Inc., New York distributor). U. S. patent applied for. U. S. trademark 266,366.

Ampules Buffered Solution of Nupercaine Ciba 7 cc 1 200

Ampules Solution of Nupercaine Ciba 5 cc 1 1000

Solution of Nupercaine Ciba 2%

Tablets Nupercaine Ciba 50 mg

Nupercaine occurs as fine white crystalline odorless powder hygroscopic, very soluble in water, about 2 in 1, freely soluble in alcohol, soluble in acetone and chloroform, slightly soluble in benzene, ethyl acetate and toluene on warming but with difficulty in the cold. Its aqueous solution about 1 in 20 is faintly alkaline to litmus, produces a definite anesthesia on the tongue. Nupercaine melts at 90 to 94°C.

Transfer about 0.5 Gm of nupercaine to a suitable Squibb separatory funnel, add 25 cc of water, followed by the addition of 2 cc normal sodium hydroxide solution and extract with three successive portions of purified petroleum benzene using 25 cc, 20 cc and 10 cc respectively. Evaporate the combined petroleum benzene extractions to dryness, the crystals melt at not less than 64°C. Nupercaine base fluoresces with the more common oxygen containing acids. Dissolve about 0.5 Gm of nupercaine in 50 cc of water, add 0.2 Gm of potassium perchlorate previously dissolved in 25 cc of water and allow to stand several hours, the crystals of nupercaine perchlorate crystallized from water melt at 130 to 132°C. Dissolve about 0.5 Gm of nupercaine in 50 cc of water, separate portions of 10 cc each, yield a white precipitate on the addition of 1 cc of nitric acid and 2 cc of silver nitrate which after decantation of the supernatant is soluble in an excess of ammonia water, no turbidity with 1 cc of diluted hydrochloric acid and 1 cc of barium chloride solution (sulfate), no coloration or precipitation on saturation with hydrogen sulphide (salts of heavy metals).

Dry about 0.5 Gm of nupercaine accurately weighed over sulphuric acid in a desiccator for forty-eight hours, the loss does not exceed 2.5 per cent. Incinerate about 0.5 Gm, accurately weighed, the residue is not more than 0.1 per cent. Transfer about 0.5 Gm of nupercaine to a 400 cc beaker, add 75 cc of water, followed by the addition of 25 cc of tenth normal silver nitrate solution and 10 cc of nitric acid, subsequently boil with continuous stirring and allow to cool in a dark place. Collect the precipitate of silver chloride on a Gooch crucible wash with nitric acid and water, followed by alcohol and ether, finally

dry to constant weight at 105 C the amount of hydrogen chloride calculated from the silver chloride found corresponds to not less than 95 per cent nor more than 97 per cent calculated to the dried substance. Transfer about 0.5 Gm of pure reagent Ciba accurately weighed to a suitable Squibb separator funnel add 50 cc of water followed by the addition of 2 cc of normal sodium hydroxide solution extract with six successive portions of chloroform using 50 cc 25 cc 20 cc 15 cc 10 cc and 10 cc respectively wash the combined chloroform solution with 15 cc of water and evaporate to a thick oil in a stream of warm air expose over sulphuric acid in a partially exhausted desiccator dissolve the oily residue in about 10 cc of previously neutralized alcohol warm slightly add 10 cc of tenth normal hydrochloric acid solution followed by the addition of an equal volume of water determine the excess of acid by titration with fiftieth normal sodium hydroxide solution using methyl red as an indicator the amount of tenth normal hydrochloric acid solution consumed corresponds to not less than 99.5 per cent nor more than 90.5 per cent butyloxycinnamic acid diethylethylene diamide calculated to the dried substance

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT
W A PUCKNER Secretary

DI-CITURIN NOT ACCEPTABLE FOR N N R

Di Citurin is stated by the Chemico Biologic Laboratories to be Potassium Acetyl Citrate and in the advertising it is asserted that the product is 'a basic compound not a mixture.' In the information submitted to the Council, however, the firm states that 'the substance is acetylated Citrate of Potassium with Magnesium Salicylate present as a by-product.' Furthermore the A M A Chemical Laboratory reports that a microscopic examination of a specimen of the product revealed two distinct and separate sets of crystals one resembling potassium acetate closely, the other resembling potassium citrate. The conclusions of the Laboratory were submitted to the Chemico-Biologic Laboratories with a request for evidence that Di-Citurin is a definite substance and not a mixture. This evidence was not supplied, but the firm again emphasized the presence of relatively large amounts of magnesium salicylate as an impurity. A second specimen was submitted which apparently was quite impure and had a strong odor of acetic acid. The Laboratory concludes that the product does not have the composition claimed.

In the advertising Di-Citurin is described as 'A therapeutic agent that controls arthritis and rheumatic affections by physiologic rather than chemical action and without irritant or depressant effect.' It is stated that the pharmacological actions of Di Citurin that fulfil in a notable degree the requirements in the treatment of these affections are. An increase in the leucocytes which raises body resistance to infection. A distinctly individual action upon the filtration membranes of the kidney markedly increasing their permeability to the passage of various excretory substances of the blood, but gives no hint of the similar effects to be obtained from alkali acetates and citrates. This invites the uncritical use of the product as does also the name, which the proprietors state has been coined from 'Di' for diuretic 'cit' for citrate and 'urin' for urine.

The evidence that is presented by the firm's advertising is based on a discussion of chlorides, no account being taken of other acid base factors. Sweeping claims are made for the value of the drug in the treatment of arthritis as well as for renal elimination but no evidence is offered that the action of Di Citurin differs from that of a mixture of potassium acetate and potassium citrate or from the use of either drug alone. In the cases in which there is stated to have been a reduction of blood pressure no statement is made as to bed rest nor are simultaneous control cases given.

The advertising is largely made up of partly true but essentially misleading statements in effect it constitutes an attempt to use simple alkaline diuretics of unquestioned but extremely limited value as the basis for grotesque claims which cannot deceive any but the most ignorant. It would require many pages to discuss the advertising adequately for such a discussion must be strictly governed by the weight of available evidence, whereas the advertising is not thus limited frequently containing statements for which there is no evidence either for or against.

Di Citurin is unacceptable for New and Unofficial Remedies because its composition is not correctly declared because the therapeutic claims advanced are exaggerated and unwarranted because its therapeutically suggestive name will lead to uncritical

use and because no evidence is offered that the product possesses any advantages over a mixture of its components over a simple mixture of alkali acetate and citrate, or over alkali acetate or alkali citrate alone.

COMMITTEE ON FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COMMITTEE ON FOODS OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMOTION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HEFTWIG Secretary

VELVEETA

A Delicious Cheese Food Kraft Process American Cheese with added milk sugar, milk minerals and water

Manufacturer—Kraft-Phenix Cheese Corporation Chicago

Description—A cheddar cheese admixed with cream (or butter and skim milk powder), milk whey powder and salt packed in tin foil lined one half pound packages

Manufacturer—Milk from tuberculin tested cattle is pasteurized brought to a temperature of 37 C and curdled by the action of added rennet. The whey is drained from the curd. The curds are matted pressed into regular cheese molds and aged under controlled temperature and humidity conditions. The typical flavor and consistency of cheddar cheese develops during the aging process.

The drained whey is spray-dried by being forced under a pressure of 1800 pounds per square inch through small apertures into a hot air drying chamber (approximately 300 F). The dry whey falls as a powder into a hopper in the bottom of the chamber and is released into barrels.

Cheddar cheese selected as to quality consistency and flavor is finely ground and then mixed with cream (or butter and skim milk powder) whey powder and salt. The mixture is pasteurized at 145 F for thirty minutes by being forced through a specially constructed hot water jacketed pasteurizer is packed in one half pound tin-foil lined packages by automatic machinery and is immediately chilled.

About 30 per cent of the whey separated from the original milk used in making the cheddar cheese is returned to the cheddar cheese mix in the manufacture of Velveeta. Butter with skim milk (equivalent to composition of cream) is substituted for fresh cream when insufficient quantity of the latter is available.

Chemical Composition— (proximate analysis)

Moisture	44.0%
Ash	0.0
Fat (Babcock method)	2.0
Protein (N x 6.25)	15.0
Lactose (Bertrand method Mathews Physiological Chemistry page 92)	0.3
Calcium (Ca)	0.1%
Phosphorus (P)	0.1

(proximate analysis of milk whey used)

Moisture	0
Ash	0.0
Protein (N x 6.25)	1.0
Fat (ether extract)	0
Reducing sugars (calculated as lactose with water of crystallization)	7.4

Calories—

3.27 per gram
92.9 per ounce
1.486 per pound

Vitamin—Contains approximately 10 vitamin A units per gram. 75 mg of Velveeta is equivalent to 10 mg. of butter in vitamin A potency.

The vitamin content may be considered as approximately that given for cheddar cheese in U. S. Department Circular 84 (1929), Vitamins in Food Materials.

A + to -
B (all eat or not eat test data)
C (all eat or not eat test data)

Claims of Manufacturer—Velveeta a new type of cheese food richer in milk minerals and lactose than the usual cheddar cheese containing the milk whey is recommended to supplement the milk intake of growing children. It spreads well on bread and is well adapted for sandwiches and salad.

Velveeta is a good source of vitamin A.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY MARCH 21, 1931

MENSTRUATION AND OVULATION

Most physicians are accustomed to assume that menstruation is in some way connected with ovulation in women, or, more specifically, with the fate of a liberated ovum. If the ovum is fertilized and implanted, menstrual changes are averted. Coincidentally has pointed out that the heart of the difficulty in understanding some of these fundamental features of the reproductive cycle in man obviously lies in ignorance of the time relation of ovulation and implantation with respect to menstruation. It is not known, by any direct observation, he states, when the primate ovum is discharged, the unfertilized ovum has never been observed after leaving the ovary, nor has the fertilized egg been seen early enough to give any information with regard to the earliest stages of implantation, i.e., during the first two weeks. In the lower forms the phenomenon of estrus with its sharply defined period serves as a clue to the moment of ovulation. Menstruation is by no means identical, as some have believed, with the estrus of animals. To many students it has represented "merely a violent demolition of the premenstrual uterine edifice, some days after the expected tenant fails to arrive. The only normal outcome of an ovulation is pregnancy, and the hemorrhage is viewed as a pathological result of failure in this respect."

A group of investigators² at the Johns Hopkins Medical School now venture the assertion that there is something radically wrong with the prevailing or "modern" gynecologic theory of the menstrual process, which presupposes ovulation and makes the degeneration of the corpus luteum responsible for the uterine bleeding. They have postulated that the cause of menstruation is an active one and have searched outside the ovaries for the source of the stimulus, probably hormonal in nature. Working with female monkeys they have found, as others had observed that injection of the Allen-Doisy hormone preparation causes bleed-

ing in the animals, whether normal or castrated. The effect is, however, not a direct one, for hypophysectomy abolishes the effect. But bleeding occurs in hypophysectomized as well as normal animals by injection of anterior lobe extracts or by implants of the fresh gland. This is interpreted as a direct effect. Furthermore, bleeding from the uterine mucosa is a phenomenon independent of hyperplasia, swelling, or even congestion of the tissues. The Baltimore investigators point out that it does not follow, of course, that bleeding is normally an independent phenomenon. They are fully aware of the interactions of all parts of the body, the endocrines in particular. Thus, normally in women the follicle stimulating and the luteinizing hormones come into play, ovulation occurs, the anterior lobe is stimulated, and bleeding occurs from a "prepared" or pregravid endometrium of the Hirschmann and Adler type. But, they add the stimuli coming from the ovary (or other link in the endocrine chain) may be insufficient to liberate the first two but quite adequate to liberate the hormone causing bleeding. In the absence of all these hormones—menorrhoea.

The possible absence of ovulation during long periods in which uterine bleeding may proceed seems now to be established. Hartman, Firor and Geiling allege that by their studies pointing to the action of the hypophyseal hormone a physiologic basis of uterine bleeding is for the first time demonstrated and the menstruation problem is lifted from the realm of theory and conjecture. It would seem, from the experiments on the monkey to be possible to produce bleeding in a woman much more readily than stimulating a refractory ovary, and hence a dormant uterus, into action. The gynecologist interested in promoting menorrhoea must determine what benefit the patient receives from a mere bleeding without the usual concomitant "estrous," not to mention pregravid, changes.

WORK OF THE UNITED STATES PUBLIC HEALTH SERVICE

Many factors have exerted an influence in bringing about a change in the practice of medicine. Improved modes of transportation, professional specialization, increase in hospital facilities and codification of ethical standards have contributed to this change in no small measure. However, supporting the efforts of every physician in this country, and used by him either consciously or less directly, are the vast facilities in medical research and statistical information provided by the United States Public Health Service, an institution of such manifold activities and achievements that it is difficult to evaluate its influence on present-day medicine. As is true of most government bureaus, there has been a steady expansion in its activities from a modest beginning until, at the present time, according to a recent issue of *Public Health Reports*,¹ the service

¹ Corner, G. W. Oestrus, Ovulation and Menstruation. *Physiol. Rev.* 3: 457 (Oct.) 1923.

² Hartman, C. G., Firor, W. M. and Geiling, E. M. K. The Anterior Lobe and Menstruation. *Am. J. Physiol.* 95: 662 (Dec.) 1930.

employs more than 5,000 persons with an annual budget of \$11,000,000.

In 1798 Congress established the Marine Hospital Service, the forerunner of the present Public Health Service, which name was adopted in 1912. The original purpose of the service was to provide care for sick and disabled seamen not only in seaports but wherever in the country such service was needed. In order to support this new government venture, all sailors on American vessels engaged in foreign or coastwise trade were taxed 20 cents a month. The collector of customs gathered the fees which, no doubt, accounts for the fact that the Public Health Service has always been in the Treasury Department. Gradually the activities of the Marine Hospital Service were expanded until it became a federal health service. Thus in 1878 authority was granted to the service to prevent entry of disease into the country. In 1893 a further significant step was taken when power was granted by Congress to impose quarantines in order to prevent interstate spread of all infectious and contagious diseases. Since the Public Health Service by reason of its quarantine duties was the first agency to diagnose and to become familiar with such diseases as cholera, smallpox and yellow fever, it was natural that investigations into the etiology and the disseminating agents of such diseases should become a part of the interests of the service. Congress in 1901 authorized the construction of the Hygienic Laboratory in Washington, where investigations of infectious and contagious diseases could be carried on. Further expansion included studies into the conditions that influence the spread of diseases of man, and the culmination of the work of the service along investigative lines was reached in 1930, when the name was changed to the National Institute of Health and generous appropriations were made for additional buildings and equipment. This division of research of the service likewise carries on investigations in the so-called pure sciences which promise to have a bearing on the more practical aspects of the general problem. One of the duties of this division consists of supervision and control of biologic products. Viruses, vaccines, serums, antitoxins and similar substances to the value of \$10,000,000 are supervised annually—work that requires inspections in many places in the United States and in a number of countries in Europe.

While the original purpose of the Public Health Service was to provide care for seamen, there are only twenty-five marine hospitals in this country. The policy has been to arrange for this care by contract with private hospitals. Some 300,000 persons apply annually for treatment in the marine hospitals and outpatient offices and there are from 3,000 to 4,000 sailors constantly in hospitals. More than 52,000 patients were given dental treatment during the last year. This division of the Public Health Service is charged also with the physical examination of candidates for license

as pilots and other ships' officers, lighthouse keepers, able-bodied seamen and coast guard. Marine hospitals for more than ten years have replied to radio requests for medical advice from vessels at sea. Certain of the marine hospitals have become known for their work on special diseases, notably the one at Fort Stanton, New Mexico where tuberculosis is the special interest and the National Leprosy Home at Carville, La., where the work is sociological as well as medical in character.

The maintenance of quarantine is another of the duties of the Public Health Service. The prevention of free travel of persons or animals infected with a contagious disease is one of the oldest methods whereby society protects its health. The discovery of the mode of transmission of many of these diseases has helped to facilitate the efficacy of quarantine, on the other hand increase in the extent as well as development of newer modes of travel has increased the difficulty of such control. The Division of Foreign and Insular Quarantine of the service is charged with the prevention of entrance of infectious and contagious diseases into the United States at ports of entry and also cooperates with the Immigrant Service of the Department of Labor in examining immigrants. In addition there is careful observation abroad, in conjunction with consular officers, in order that such diseases may be prevented from being transported to this country on vessels. Cholera, plague, yellow fever, smallpox and typhus fever are especially guarded against, and control measures, either applied to the person or directed against the transmitting agents, are effectively employed. The Division of Domestic Quarantine supervises the interstate quarantine, cooperates with state departments of health, controls the water supplies for drinking on interstate carriers, cooperates in maintaining efficient sanitation in national parks, and studies and suppresses epidemics arising within the country.

The accumulation, classification, interpretation and, in recent years, popularization of facts pertaining to public health is one of the functions of the Division of Sanitary Reports and Statistics. Through this work the larger aspect of national health—etiology, epidemiology and preventive medicine—are made available to the physician. The Division of Venereal Diseases has cooperated with state boards of health in preventing the spread of syphilis and gonorrhea by disseminating information through lectures and films, gathering reliable statistics on incidence and treatment, in maintaining public clinics and in determining the value of certain diagnostic measures. The Division of Mental Hygiene is interested, among other things, in the problem of drug addiction. While a small proportion of addicts are mentally normal, the larger part are abnormal in this respect and are considered by the service as problems in mental hygiene.

The present day citizen of this country accepts much as a matter of course. His very existence in great

groups in large cities is possible because of agencies which he supports, to be sure, but of the nature of which he is usually unaware. Such an agency is the Public Health Service with its long and honorable record of activity and its extraordinary awareness of the state of health of the nation. In this institution the individual physician has effective support for his labors.

PHOSPHATASE IN BLOOD AND BODY TISSUES

At present much attention is being directed to calcium in the diet. There are of course, two main reasons for this emphasis on the part of students of nutrition: first the usual American dietary has been shown to be less satisfactory in its content of this element than in most other respects while, second, there is a relatively large demand for calcium in the body, especially at certain periods in the life cycle. The normal development of bones is conventionally associated with an adequate supply of lime. However, phosphorus is likewise fundamentally involved in skeletal growth, but, since it is more plentifully supplied in the ordinary dietary, it seems to have received somewhat less attention by investigators of the biochemistry and pathology of bone development. The fact that most rations provide a sufficient supply of phosphorus indicates the variety of chemical combinations, both organic and inorganic, in which this element is presented to the body. Considerable uncertainty has existed as to the device whereby the cells in calcifying cartilage and other tissue cells remove the phosphorus from the blood, evidence has accumulated that an enzyme, phosphatase, plays an important part in this reaction.

The principal action of phosphatase consists in decomposing acid-soluble esters of phosphoric acid to inorganic phosphate. The enzyme has been shown to attack hexose phosphate, glycerophosphate, glycerophosphate and even the sodium salt of guanine nucleotide. It acts most rapidly at the unusually alkaline reaction pH 8.9. It has been found in high concentrations in growing bone, kidney and intestinal mucosa, and in less amount in the liver and the central nervous system. In a recent study, Kay¹ has shown definitely that normal blood plasma contains a phosphatase, qualitatively like the enzyme in the tissues, but present in small amount. The human kidney contains 300 times more of this factor than the same weight of plasma. The phosphatase content of the blood was examined in a variety of disease conditions. There was found little change from the normal values in diabetes, various diseases of the kidneys, arthritis or hypoparathyroid conditions and in persons with neoplasms. In some cases with thyroid involvement, and in osteomyelitis, rickets, osteitis fibrosa, osteomalacia and osteitis deformans, the phosphatase was greatly increased, being twenty times

greater than normal in some instances. Furthermore, the increase in enzyme concentration was, in general, parallel to the severity of the disease.

Taken together with certain observations on the phosphatase of normal tissues, these results with the plasma enzyme concentration in generalized bone disease indicate the possible normal behavior of these factors. It has been shown that phosphatase is not found in noncalcifying cartilage but that where calcification is taking place the enzyme is present, the more active the formation of bone, the greater the concentration of enzyme. Phosphatase occurs in embryonic bone growing in vitro. Apparently under normal conditions little of the enzyme from bones or other tissues passes out of the cells with the blood, but, when widespread breakdown of such tissues occurs, phosphatase accumulates in the blood in greater concentrations since it is only slowly excreted.

Kay has pointed out that, in contrast to the recognized changes in calcium and inorganic phosphate in the plasma in diseases of bones, far greater variations in phosphatase occur. Whether or not these newly discovered factors will facilitate diagnosis is not yet known. There is always the possibility of the practical application of enzymes to therapeutic requirements, an eventuality which in the present connection, would be particularly fortunate.

PHYLOGENETIC IMMUNOLOGIC RECAPITULATION?

Current theories of allergy and immunity are based on the assumption that normal human proteins are unchanged in specificity from the time the ovum is fertilized to its death. A different condition might have been developed if early experimenters had made the opposite assumption, a dynamic protein specificity. Mass immunizations of adults to diphtheria, scarlet fever and poliomyelitis, for example, might have been pictured as a normal primummunity, observed allergies as a result of arrested maturations, atypical differentiations or embryonic protein reversions.

Biochemical stasis is not assumed in other fields of pathology. An embryologic recapitulation of evolutionary history is postulated by many anatomists, with arrests, reversions and atypical recapitulations as the accepted explanation for numerous adult structural abnormalities. Wells and Corper² and Long³ have apparently demonstrated embryologic recapitulation in human tissue enzymes. In all adult mammals except man and the higher anthropoids there is an adenine-splitting enzyme. Fifth to sixth month human embryos contain this lower mammalian enzyme, the enzyme, however, disappearing before the ninth month of intra-uterine life, at which time the human fetus

¹ Kay, H. D. Plasma Phosphatase. *J. Biol. Chem.* **89**: 235-249 (Nov.) 1930.

² Manwaring, W. H. *J. Immunol.* **19**: 135 (Aug.) 1930.

³ Wells, H. G. and Corper, H. J. *J. Biol. Chem.* **6**: 469 (1909).

³ Long, A. R. *J. Biol. Chem.* **15**: 449 (1913).

apparently passes into the higher human-anthropoid type of nitrogen catabolism. A similar enzymic recapitulation is suggested by the researches of Mendel and Mitchell.⁴ They report that, in the embryonic domestic pig, nitrogen metabolism is effected without the aid of a uric acid-splitting enzyme, an intra-uterine purine metabolism somewhat resembling that of birds and reptiles. About two months after birth, uricase develops in domestic pigs, after which their purine metabolism is of the mammalian type.

The demonstration that human and animal protein specificities are not the same throughout the life of an individual is, therefore, if confirmed, one of the most significant basic contributions of the past two years. Picado⁵ reports that rabbits immunized with human serums of the 7 to 10 year age group yield antibodies quantitatively diagnostic for that age group, and that human serums of the 60-70 years age group can be similarly diagnosed. In his hands, young rabbits immunized with the blood or serum of old rabbits, give sharply defined isoprecipitins for the old-age proteins, negative reactions being obtained with youthful proteins. It is difficult to explain Picado's results without the assumption of a definite cycle of maturation of protein in each individual.

That such postulated maturations of protein possibly proceed along phylogenetic lines is suggested by recent studies of spontaneous mass immunizations. Toyoda and his co-workers⁶ report that the adult Chinese of Manchuria show but half the percentage susceptibility to Dick toxin shown by the adult Japanese, and but one forty-fifth of the Japanese percentage morbidity to scarlet fever, the two races being equally susceptible at birth. Here are two races living under practically identical conditions, subject to the same environmental antigenicities. The observed difference is easily explained on the assumption that one is here dealing with a spontaneous protein maturation and that the Chinese are hereditarily endowed with more advanced protein maturation potential than the Japanese. Thus apparently fantastic suggestion is raised to the rank of a serious immunologic theory by recent clinical studies by Friedberger and his co-workers,⁷ of the Hygienic Institute, Berlin. These investigators report the gradual appearance of apparently spontaneous maturation "antibodies" against certain noninfectious antigens in growing children, antigens, they believe, which never come in contact with human tissues. According to their interpretation, these "antibodies" are formed as a result of an hereditary general protein maturation law.

No immunologist, of course, would take the Friedberger maturation hypothesis as more than a challenge to basic research. But until the Friedberger theory is

definitely ruled out, current antiallergic therapy cannot be said to rest on a firm theoretical basis, nor can epidemiologic deductions from observed mass immunizations be assumed to be more than of tentative validity.

Current Comment

PATHOGENESIS OF OBSTRUCTIVE ATELECTASIS

The persistent study of experimental atelectasis is an indication of the importance of an understanding of the pathogenesis and mechanism of this condition to the thoracic surgeon. A situation in which the alveoli of the affected area are collapsed and contain no air is normal in the fetus, in which the aeration of the blood is effected by the maternal pulmonary apparatus, it may be brought about by compression resulting from an abnormal collection of pleural fluid, an intrathoracic tumor or massive collapse (pneumothorax), or it may result from obstruction in the bronchi. Recent studies of Corvillo and Birnbaum¹ indicate that the disappearance of the alveolar air in the atelectatic area can be accounted for by absorption into the blood. Obviously the atelectasis produced by obstruction lends itself most readily to experimental procedure. Using this device Van Allen and Lindskog² have carried out an extensive study, which has explained some controverted points and raised new questions. They observed that atelectasis did not invariably follow a mechanically successful occlusion of the air passage involved, in fact, after being convinced that the alveolar air was exhausted, they frequently observed that the lobe of the lung contained air after an interval of several hours. The authors suggest that there is free intercommunication between the structural units of the lung and that air will readily pass from one lobule to another and hence to and from an area distal to the obstruction in the bronchus, provided the blocked bronchus ventilates only a portion of the lobe of the lung. When, however, all the air passages to the lobe are obstructed, atelectasis occurs. "The development of atelectasis following bronchial obstruction must depend primarily on the rate of two processes: the loss of air and recession of air." Again, on theoretical grounds the obstruction, usually produced by chemical or bacteriologic inflammation of the bronchi, should be dislodged or moved proximally by coughing. However, at times it appears that the plug is thus actually drawn farther into the peripheral portion of the alveoli. Van Allen and Lindskog point out that only when there is a residuum of air behind the plug is coughing effective in removing it. This air passes into the alveoli either past the plug during inspiration preceding the cough or through the septums from adjacent lobules. In making suggestions for the application of the facts observed the authors advise caution lest factors in the pathogenesis of atelectasis, not yet recognized, be unwittingly promoted.

⁴ Mendel L. B. and Mitchell P. H. *Am. J. Physiol.* **20**: 67 (1929)
⁵ Picado T. C. *Compt. rend. Soc. de biol.* **102**: 651 (Nov. 29) 1929

⁶ Toyoda Taro, Moriaki Joji and Futagi Yasuo. *J. Infect. Dis.* **46**: 186 (March) 1930

⁷ Friedberger L., Bock C. and Furtenheim A. *Ztsch. f. Immunitätsforsch.* **64**: 294 (numbers 3/4) 1929

¹ Corvillo J. N. and Birnbaum C. L. *Alberca (A. J. Clin. Arch. Surg.* **21**: 1214 (Dec.) 1929
² Van Allen C. H. and Lindskog C. F. *Obstructive Atelectasis*. *Arch. Surgery* **21**: 1195 (1929)

Association News

MEDICAL ALIIS

JOUR A M A
MARCH 21 1931

CONTRIBUTIONS FOR MEDICAL SALON IN PERSHING HALL

The sum contributed this week for the Pershing Memorial in Paris brings the total to \$2197.60. A list of those who have contributed during the current week follows:

A. M. Wood M.D.	Shelburne Mo.	H. A. Adix M.D.	Crasham Ore.
Benjamin W. M.D.	Stearns M.D.	J. A. Pettit M.D.	Portland Ore.
dilla M.D.	for Whitney H.	C. C. Hartman M.D.	Litchburg
Idce M.D.	Undill M.D.	Kellogg Speed M.D.	Chicago
and Ralph H. M.D.	Loomis M.D.	W. Maryin Munsell M.D.	Grand
Sidney M.D.	both deceased	view Wash.	
J. T. McLean M.D.	Altadena	Kings J. Scott M.D.	Pharr Texas
Egbert T. Scott M.D.	West Phila.	Gilbert Fitzpatrick M.D.	Chicago
delphin Ia	Chicago	W. W. Kuntz M.D.	Berry Ill.
Franklin H. Martin M.D.	Kansas	Tunius C. McHenry M.D.	Idher
Morris B. Simonsen M.D.		ton Wyo.	
City Mo.		Alexander Heron Davisson M.D.	
Luther A. Brown M.D.	Iceland	Philadelphia	
Maine		B. Montgomery M.D.	Long
		Berch Calif	

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks
The American Medical Association broadcasts at 10 a. m. on Monday 10 45 on Tuesday 9 15 on Thursday and 10 30 on Saturday, over Station WBBM (770 kilocycles or 589.4 meters).

The program for the week is as follows:
March 23 Hygienic Adjustment Throughout Life
March 24 Are Modern Parents Failures?
March 26 Foothill Hero—Ten Years After
March 28 The Preschool Years

Five minute health talks may be heard over the Columbia Broadcasting System daily except Sundays and holidays from 12 to 12 05 p. m., Central Standard Time.

The program for the week is as follows:
March 23 Health and Advertising
March 24 Ringworm of the Feet
March 25 Work and Health
March 26 Work and Health
March 27 Happiness and Handicaps
March 28 Happiness and Handicaps

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION PUBLIC HEALTH ETC.)

ARIZONA

Bills Introduced—H 203 proposes a new pharmacy practice act. Physicians apparently, are prohibited from dispensing drugs and medicines and may administer them only in emergencies. H 220 proposes to authorize the establishment of a state tuberculosis sanatorium.

Hospital News—With the completion of a laboratory, April 1, the new Sage Memorial Hospital, at Ganado in the Navajo Indian reservation, 55 miles northwest of Gallup, N. M. will be in full operation. A gift of \$50,000 from the Russell Sage Foundation supplied the funds for the new building. The hospital is conducted by the board of national missions of the Presbyterian church. The building is a two story modern structure providing for seventy-five beds. Much of the stone equipment was bought with funds given by Indians. The x-ray unit is said to be the only one in an area of nearly 50,000 square miles. The hospital maintains its own gas manufacturing plant to supply fuel gas to the diet kitchens, laboratory and sterilizing rooms.

ARKANSAS

Bill Introduced—S 220 proposes that persons who have completed the regular course of study in an accredited high school shall be eligible to enter any medical college in the state.

Society News—Drs. George E. Cannon, Hope and Arley D. Cathey, El Dorado addressed the Tri-County Medical

Society (Union, Ourachita and Columbia counties) El Dorado at the January meeting, on embolism and epidural infection of the spinal cord respectively. The Yell County Medical Society was organized January 8, Dr. Henry Lee Montgomery, Gravelly, was elected president.

Illegal Practitioner Fined—William Henry Newsom, Louann, was fined \$100 in Justice L. W. Bowers court. Cunden February 20 on a charge of practicing medicine without a license according to a report from the state medical board. Newsom claimed that he had been graduated from the St. Louis College of Physicians and Surgeons and licensed in Louisiana in 1900 and that he had been licensed in Arkansas in 1903. Newsom's attorney gave notice of an appeal to the circuit court.

CALIFORNIA

University News—The University of California Medical School will celebrate its semiannual alumni day, March 24. At the afternoon session Dr. John I. Sampson among others will speak on Therapeutic Use of Potassium in Certain Cardiac Arrhythmias. Clarence D. Jerke, Ph.D. will deliver the annual Alpha Omega Alpha Lecture on The Alchemy of Alcohol.

Probation for Narcotic Violators—At a meeting of the California Board of Medical Examiners, Los Angeles, February 25 Dr. David L. Matzke, San Francisco, was placed on probation for three years during which time he shall not apply for or have a narcotic permit or have narcotics in his possession. Dr. Walter W. Hopson, Los Angeles was placed on probation for five years. He was ordered to surrender to federal officers all narcotics in his possession.

Personal—Bennet M. Allen, Ph.D., professor of zoology, University of California, Los Angeles, has received a grant from the National Research Council to further his investigations of the glands of internal secretion. Dr. John B. deC. M. Saunders, Edinburgh has been appointed assistant professor of anatomy in the University of California Medical School. Dr. James E. Pendergrass, Clovis has been appointed health officer of Fresno County to succeed Dr. George L. Long who has held the position for several years. Dr. Harold P. Muller has been appointed city health officer of Modesto to succeed Dr. James W. Morgan. Dr. Cecil G. Newbecker has been appointed health officer of Kings County to succeed Dr. Aaron S. Torrens.

Traveling Laboratory Offered to University—The Southern Pacific Company recently offered the use of a completely equipped laboratory on wheels to the University of California Hooper Foundation for Medical Research to assist in answering emergency calls throughout the state for help in fighting epidemics. The car has been rebuilt to fill the needs of a staff of public health workers either for emergencies or for routine examinations and educational programs and is available at any time for use anywhere along the railroad lines. It has a well equipped bacteriologic and chemical laboratory, an x-ray room with facilities for developing films, a waiting room examining room quarters for two physicians and a technician, a galley and combination dining and record room and quarters for a crew of two. Karl F. Meyer, Ph.D., and Dr. Jacob C. Geiger of the foundation have already made use of the car in demonstrations before various medical associations.

COLORADO

Bills Introduced—H 129 proposes to limit the employment of drug store and pharmacy employees to an average of nine hours a day, or to not more than 108 hours in any two consecutive weeks or to not more than thirteen days in such two consecutive weeks. H 271 proposes to regulate child caring agencies and institutions.

Society News—Drs. Alfred L. Briskman, Colorado Springs, and Clarence B. Ingraham, Jr., Denver addressed the El Paso County Medical Society March 11, on 'Red Cell Sedimentation in Diagnosis and Prognosis' and 'A Consideration of Conditions of American Obstetrics, with Some Local Statistics' respectively. The Medical Society of the City and County of Denver was addressed February 17 by Dr. Alfred H. Washburn on 'Prevention of Heart Disease in Early Life'. At a meeting of the Colorado Society of Clinical Pathologists January 17 it was recommended that a prize in clinical pathology be established to be awarded annually to the student who has shown the greatest proficiency in laboratory work in clinical

pathology at the University of Colorado School of Medicine. The minimum amount of the award was set at \$25, the exact amount to be settled each year by a vote of the society. The scientific program at this meeting consisted of a symposium on undulant fever, among the speakers being Drs Philip Hillmanitz Denver, Carl W. Maynard Pueblo, Leo C. Hulsman, Colorado Springs, and Josephine N. Dunlop, Pueblo.

DELAWARE

Bills Introduced—S 163 proposes to authorize the state board of health to appoint a corps of physicians for work in connection with the public school system. Substitute for H 169 to amend the workmen's compensation act, proposes (1) to permit an injured employee to select his own physician and (2) to strike out the limit on the extent of the medical aid for which an employer is liable. S 108 to amend the medical practice act, proposes that the medical council shall consist of three separate boards of medical examiners: one board representing the Medical Society of Delaware; one representing the State Homeopathic Medical Society of Delaware; State and Peninsula; and one representing the Delaware Osteopathic Association. Osteopathic applicants are to be examined by an osteopathic board in all subjects in which medical applicants are examined, including materia medica, except that the practice of osteopathy is substituted for the practice of medicine. Apparently, all present osteopaths may receive, without examination, unlimited licenses permitting them to prescribe and administer drugs and to practice surgery.

DISTRICT OF COLUMBIA

Dr Novy Gives Kober Lecture—Dr Carrel Receives Cancer Prize—Dr Frederick George Novy, professor of bacteriology, University of Michigan Medical School, Ann Arbor, will deliver the annual Kober Lecture, March 28, at Gaston Hall, Georgetown University. Dr Novy's subject will be "Respiration of Micro Organisms." On the same evening, Dr Alexis Carrel of the Rockefeller Institute for Medical Research, New York, will receive the Dr. Sofie Nordhoff-Jung Cancer Prize of \$1,000. Baron Friedrich von Prittwitz, German ambassador to the United States, will make the presentation.

ILLINOIS

Bills Introduced—S 197 proposes to regulate the practice of massage and physiotherapy and to authorize the department of registration and education to license such practitioners to use manual, physical and mechanical measures, and all natural methods for therapeutic purposes. S 191 proposes to repeal that section of the pharmacy practice act which provides that no person may purchase, lease, acquire or establish a drug store or pharmacy except (1) a registered pharmacist, (2) a partnership, an active member of which is a registered pharmacist or (3) a corporation, each officer of which is a registered pharmacist. H 453 proposes to make it unlawful "for any person to experiment or operate in any manner whatsoever upon any living dog, for any purpose other than the healing or curing of said dog."

Society News—Drs Sandor Horwitz and William A. Hinkle were the speakers at the meeting of the Peoria City Medical Society, February 17, on "Medicine as Practiced by the Early Hebrews and Jews during the Bible and Talmudic Times" and "Anal Rectal Abscess and Fistula." Dr Noble Sprout Heaney, Chicago, spoke, March 3, on endometriosis. —Dr Nelson M. Percy, Chicago, addressed the Will-Grundy Counties Medical Society, Joliet, March 4 on gonorrhea. Dr James H. Hutton spoke, March 11, on "Endocrine Factors in and Endocrine Control of Obesity." —Drs Andrew C. Ivy and William R. Cubbins, Chicago, addressed the Sangamon County Medical Society, Springfield, March 5, on the cause of gallstones and "Fractures—Conservative and Operative Treatment." —Dr Ernest Sachs, St. Louis, addressed the Adams County Medical Society, February 9 on "Diagnosis and Present Day Treatment of Brain Tumors."

Chicago

Personal—George P. Drever, Ph.D., professor of physiology and head of the department of physiology and physiologic chemistry at the University of Illinois College of Medicine since 1900, died February 27, aged 64. Prof. Drever received his doctorate from Johns Hopkins University in 1890 and taught there for ten years. His best known research was the discovery of the secretory nerves of the suprarenal glands.

Dr Meyer to Give Hektoen Lecture—Karl F. Meyer, Ph.D., director of the George Williams Hooper Foundation for Medical Research, University of California, will deliver the seventh Ludwig Hektoen Lecture of the Billings Foundation before the Institute of Medicine of Chicago in the City Club, April 24. Dr Meyer will speak on "The Animal Kingdom—A Reservoir of Disease."

Professor Evans Will Give Bacon Lectures—Dr Herbert A. Evans of the University of California Medical School will give the annual Charles Sumner Bacon Lectures at the University of Illinois College of Medicine. The first lecture, March 31, will be given at 4 p.m. on "The Hormones of the Hypophysis" and the second, April 1, at 1 p.m., on "The Relation of the Hypophysis to the Reproductive System." These lectures will be given in the library of the college of medicine at 1817 Polk Street. The public is invited.

INDIANA

Reciprocity Rescinded—The state board of medical registration and examination has canceled its reciprocity agreement with the department of registration and education of Illinois on the ground that Illinois requires of applicants for reciprocity a clinical examination in addition to the credentials presented on application.

IOWA

Society News—Dr Louis D. McGuire, Omaha, addressed the Waterloo Medical Society, February 17, on "Sodium Amytal Compared with Other Anesthetics." —At the organization meeting of the Iowa Academy of Ophthalmology and Otolaryngology, February 12, in Des Moines, Dr Gordon F. Harlness, Davenport, was elected president, Dr Harold J. McCoy, Des Moines, vice president and Dr William F. Boiler, Iowa City, secretary. Among the speakers on the program were Drs Thaddeus A. Minassian, Des Moines; Tongue Lesion, "Differential Diagnosis Between Carcinoma and Syphilis," James A. Downing, Des Moines, "Laryngeal Diphtheria," and Cecil C. Jones, Des Moines, "Acute Suppurative Mastoiditis Bilateral with Brain Abscess."

Bill Introduced—H 398 proposes to amend that portion of the state prohibition act allowing dentists to use alcohol for the purpose of sterilization, annealing gold or other like non-beverage purposes by allowing them to use such intoxicating liquor in accordance with federal statutes or regulations or in accordance with state statutes as is necessary in their professional practice and for sterilization and laboratory purposes. H 340 proposes to amend the osteopathic practice act in several important respects. Persons treating human ailments by manipulation of the limbs, muscles, ligaments and bones in order to correct displacements and abnormalities of the body, are to be deemed to be engaged in the practice of osteopathy. Applicants for licenses to practice osteopathy and surgery in addition to showing the qualifications required for licenses to practice osteopathy alone, must (1) present satisfactory evidence that they have completed a course of study equivalent to that required for practitioners of surgery licensed under the provisions of the law relating to medicine and surgery, (2) pass the examination required of practitioners of surgery licensed under the provisions of the law relating to medicine and surgery, and (3) present satisfactory evidence that they have completed a one year's internship. Licenses to practice osteopathy are not to authorize the licentiates to give any vaccines, serum, drugs or medicines included in materia medica. Licenses to practice osteopathy and surgery, however, are to entitle the holders to prescribe and furnish such drugs as may be necessary to carry on their practice as osteopathic surgeons. Under the present law, osteopaths or osteopathic surgeons may not prescribe nor give internal curative medicines.

KANSAS

Bills Introduced—S 377 proposes that boards of education in cities of more than 120,000 may provide free medical inspection for the school children. H 636 to amend the chiropractic practice act proposes to require the annual registration of chiropractors and the payment of an annual fee of \$5.

Society News—The Wandotte County Medical Society was addressed March 3 by Drs Thomas G. Orr and Louie F. Barney on "Water and Chemical Balance in Surgery and Treatment of Acute Generalizing Peritonitis," respectively. The society was addressed March 17, by Drs Paul M. Krall on "Practical Aspect of Endocrinology," and Robert M. Isenberger, "Experimental Developments in the Pharmacology of Endocrine Gland Products."

MAINE

Bill Introduced—H 683 proposes that no person, firm, organization or corporation shall engage in the practice of any healing art without being legally licensed to do so.

MARYLAND

Personal—A sound film of Dr. John Jacob Abel of Johns Hopkins University School of Medicine, Baltimore, lecturing on the relation of pharmacology to chemistry is being made under the auspices of the Chemical Foundation of New York and Johns Hopkins University.—Dr. Maurice C. Pincoffs was recently elected president of the Mental Hygiene Society of Maryland.—Dr. James MacFadden Dick, chief of staff of the Peninsula General Hospital, Salisbury, was presented with the 1930 Salisbury Award, which is a gold medal given annually to the citizen who is considered the greatest benefactor to the community.

Bills Introduced—H 232 proposes that when the immediate removal of the body of a deceased person who has died from natural causes is necessary, removal from the place of death may be authorized by the registrar of vital statistics or his deputy without a certificate of death from the attending physician if that physician is not available. H 261 proposes a new osteopathic practice act. It defines osteopathy as that system of the healing art which places the chief emphasis on the structural integrity of the body mechanism as being the most important single factor to maintain the well-being of the organism in health and disease. Two types of licenses are proposed: (1) a license to practice as an osteopathic physician and (2) a license to practice as an osteopathic physician and surgeon. Applicants for licenses to practice surgery are to be examined in surgery by the osteopathic board. Osteopathic physicians are to observe and be subject to all state and municipal regulations relative to reporting births and deaths and all matters pertaining to the public health with equal rights and obligations as physicians of other schools of medicine, and such reports must be accepted by the officers of the department to which such reports are made. Osteopathic physicians or osteopathic physicians and surgeons are furthermore, under this bill, to have the same rights as physicians and surgeons of other schools with respect to the treatment of cases or the holding of offices in public institutions.

MASSACHUSETTS

Bill Introduced—H 1175 to amend the workmen's compensation act, proposes to define incapacity as such incapacity for work as results from a physical injury arising out of and in the course of the employment of the employee but not including the results of a preexisting disease.

License Restored—The board of registration in medicine reports that the license of Dr. Robert E. Conlin, Somerville, to practice medicine in Massachusetts was restored, Dec. 11, 1930. The license was revoked Feb. 3, 1927, on account of the performance of an abortion (THE JOURNAL, April 23, 1927, p. 1328).

Society News—Dr. Charles G. Mixer, Boston, addressed the Greater Boston Medical Society, February 3 on 'Role of Obstructive Lesions in the Urinary Infections of Childhood'.—Dr. Frank H. Washburn Holden, delivered the George Washington Gay lecture at Tufts Medical School, Boston, March 4, on 'Role of Ethical Conduct in the Successful Medical Career'.—Dr. Samuel R. Meaker addressed the William Harvey Society, Boston, March 13 on 'Social Aspect of Gynecology'. Drs. Herbert S. Hutchinson, Milford N. H., and Henry A. Christian will address the society, April 10 on 'The Old and New in General Practice'.—Dr. Edward M. Hodgkins, Boston, addressed the Watertown Medical Club, March 2 on 'Changing Conception in the Operative Treatment of Inguinal Hernia'.

MICHIGAN

Bill Introduced—S 74 proposes to regulate the practice of cosmetology and to permit practitioners among other things to remove superfluous hair from the upper part of the body by the use of electrolysis, depilatories, waxes or tweezers.

Prizes for Essays on Industrial Medicine—The board of directors of the Michigan Association of Industrial Physicians and Surgeons has announced a competition for essays on subjects bearing on industrial medicine or surgery. The honorarium offered for the first prize essay will be \$50, and for the

second best \$25. The essays must contain a minimum of 1,000 words and a maximum of 3,000. The object of this competition is to encourage interns to emphasize reparative surgery while serving under the direct or competent surgeons. All interns and resident house officers in Michigan hospitals are eligible. Essays must be sent to the secretary of the Michigan Association of Industrial Physicians and Surgeons, Dr. Frank A. Poole, 620 State Office Building, Lansing, by April 1.

MINNESOTA

Society News—Dr. Chas. Roy Murray, New York, addressed the Hennepin County Medical Society, February 4 on 'General Treatment of Fractures'.—The Ramsey County Medical Society formally opened its new quarters and library rooms, February 27. Dr. Oscar W. Holcomb, president of the society, made the opening address. Drs. John M. Armstrong, Henry Longstreet Taylor, St. Paul, and Alfred J. Brown, Omaha, also spoke.—Dr. Frank I. Burch, St. Paul, gave an illustrated address on strabismus before the Washington County Medical Society, February 10.—Drs. Walter E. Camp, Minneapolis, and Elmer M. Jones, St. Paul, addressed the Minnesota Academy of Medicine, Minneapolis, March 11, on 'Pathology and Pathogenesis of Ocular Melanomata' and 'Pulmonary Enteritis' respectively.

Bills Introduced—S 355 if enacted would apparently repeal the provision of the pharmacy act that allows any general dealer whose shop is more than two miles from a drug store to sell any commonly used medicines or poisons that have been put up by a registered pharmacist for that purpose. S 621 to amend the chiropractic practice act proposes: (1) to allow the board of chiropractic examiners and the Minnesota American Chiropractic Association to determine the annual license fee to be paid by chiropractors; (2) to record chiropractors all the rights and privileges of other physicians in all matters pertaining to the public health, "including methods of natural healing or physical therapy except prescribing internal drug"; and (3) to add to the present causes for the revocation of licenses the claiming of superiority over any other chiropractor and failure to designate to the public by using terms or letters Doctor of Chiropractic or D.C., that the chiropractor is practicing under a chiropractic license. H 499 proposes to authorize critics of the fourth class to establish and maintain city hospitals. H 890 to amend the optometry practice act proposes to eliminate from the act the statement of certain practices now designated as unlawful such as itinerant vending of spectacles and the sale of eyeglasses in an established place of business, not under the supervision of a duly licensed optometrist or physician.

MISSISSIPPI

Society News—Drs. Francis M. Smith and Leon S. Tippecott, Vicksburg, addressed the Issaquena-Sharkey-Warren Counties Medical Society, February 10, on 'The Carrier and Contact Problem' and 'Why Examine the Urine?' respectively.

Counties Named for Health Units—The establishment of full time health units in Lauderdale and Pike counties has been assured, it is reported, as a part of the public health program of the Commonwealth Fund. To supplement the fund's appropriation of \$22,500, Pike County gave \$5,000, the town of McComb, \$2,900, and the towns of Magnolia, Summit and Osyka, each \$200. Figures were not mentioned for the Lauderdale unit. It is also planned to provide a central field unit for rural health work with headquarters in Jackson. This work will be done by the fund in cooperation with the state board of health. Mississippi is the third state to be selected by the Commonwealth Fund for cooperative health work, similar projects having already been started in Tennessee and Massachusetts.

Provisional Approval of Medical School—Early in July, 1930, reports were received indicating that sweeping changes had been made, probably through political maneuvering in the faculty of the University of Mississippi School of Medicine. The Council on Medical Education and Hospitals of the American Medical Association called the attention of the governor of Mississippi to the fact that the institution recognized by the Council no longer existed in fact and that before a new institution could be recognized it would need to be thoroughly inspected. This was followed however by the prompt restoration of most of the original personnel to their positions on the medical faculty. At its business meeting, Oct. 15, 1930, therefore, the Council voted that the approval of this medical school be held in abeyance until the effect of the recent changes could

be determined. Since that time the Council has received considerable correspondence from prominent physicians and others in Mississippi requesting the Council to hold the approval of this school in abeyance until the next governor and legislature of Mississippi are elected which will be in January, 1932, after which it is expected that favorable developments will occur. After due consideration the Council, at its meeting February 15, voted that the approval of the school be continued provisionally pending further developments.

MISSOURI

Society News—Dr Virgil F. Simpson, Louisville, Ky., addressed the Jackson County Medical Society, March 10, Kansas City on "Mendelian Law in Medicine."—Among others, Dr Kerwin W. Kimball gave an illustrated address on 'Newer Conception of the Function of the Thyroid' before the Kansas City Southwest Clinical Society, March 10 and Dr Edwin H. Schorer spoke on Diagnosis and Management of Pneumonia in Children."

Bills Introduced—S 345 proposes to repeal the workmen's compensation act. S 377 proposes to authorize the establishment of a hospital for convicts suffering from tuberculosis and other lingering diseases. S 378 proposes to create a division of mental diseases in the state board of health. H 483 proposes to abolish the licensing of assistant pharmacists and to provide that persons now licensed as assistant pharmacists may make application to the board of pharmacy prior to Dec. 31, 1931, and be licensed as registered pharmacists without examination. S 222, to amend the workmen's compensation act proposes that the employer shall be liable for such medical aid as shall be reasonably required to be rendered the injured employee for the first ninety days after the injury in a sum not exceeding \$750 and thereafter such additional medical aid as the compensation commission may determine to be necessary. S 419 proposes to require that all drugs of coal tar origin, intended for either internal or external human use be plainly labeled with the true English name and to show that they are of coal tar origin and with a statement of the dangerous effects of their use and the names of at least two active antidotes. The provisions of the bill, however, are not to apply when such drugs are prescribed by a licensed physician. H 594 proposes to provide for the sexual sterilization of certain inmates of state institutions.

NEVADA

Society News—Dr Joseph Marion Weldon, Mobile, Ala., addressed the Washoe County Medical Society, Reno recently on toxemias of pregnancy. At the same meeting Dr George R. Smith read a paper prepared by Dr Philip F. Schneider, Evanston, Ill., on the hormone test for early pregnancy.

Bills Introduced—S 77 proposes to regulate the practice of barbering and would if enacted, permit such practitioners to remove superfluous hair by the use of electrolysis, depilatories or tweezers. A 101 proposes to include marihuana among the substances classed as narcotics within the meaning of the narcotic act. A 161 proposes to repeal the law authorizing counties to establish and maintain public hospitals.

NEW JERSEY

Society News—Dr Felix Baum, Newark, addressed the William Pierson Medical Society, Orange February 20 on "Modern Tuberculosis Problems with Special Reference to Treatment."—Dr Aaron S. Price, New York, addressed the Summit County Medical Society, January 27, on "The Clinical Interpretation of Differential Blood Count."—Dr Ernst P. Boas, New York, addressed the Atlantic County Medical Society, March 13, at Atlantic City on "Rheumatic Fever."

Health at Trenton—Telegraphic reports to the U. S. Department of Commerce from eighty-one cities with a total population of 36 million for the week ended March 7, indicate that the highest mortality rate (257) appears for Trenton and the rate for the group of cities as a whole, 138. The mortality rate for Trenton for the corresponding period in 1930 was 165 and for the group of cities 138. The annual rate for the eighty-one cities for the ten weeks of 1931 was 142 as against a rate of 134 for the corresponding weeks of 1930. Caution is necessary in the interpretation of these figures, as weekly figures fluctuate widely. The fact that some cities are hospital centers for large areas outside the cities or that they have large Negro populations may tend to increase the death rate.

NEW MEXICO

Bills Introduced—S 117 proposes to regulate the practice of chiropody defined as the local, medical, mechanical, or surgical treatment of ailments of the human foot, except through the use of the knife (such as amputation of the foot or toes) the use of anesthetics other than local, and the use of drugs or medicines other than local antiseptics. It proposes to create for this purpose a board of masseur chiropody, to consist of one chiropodist and two medical practitioners. S 94 proposes a new state narcotic control act.

NEW YORK

Bills Introduced—S 993 and A 1362 propose to create in the state department of health a division of orthopedics and a division of cancer control. S 1047 proposes that each local registrar of vital statistics shall be paid 50 cents, and each physician and midwife 25 cents, for each birth certificate registered and 25 cents for each death certificate. S 1069 proposes to regulate the practice of barbering. A 1421 proposes to provide that each certificate of birth shall contain a photograph of the finger prints of the mother and the foot prints of the child. The impression is to be taken as soon after the birth as is practicable. A 1500 proposes to authorize the licensing of nurses registries in New York City by the mayor. A 1571 proposes to make it unlawful for any person in any way to distribute bichloride of mercury, mercuric chloride or corrosive sublimate, except on the written prescription of a licensed physician.

Report on Effects of Noise in Industry—Results of a study to determine the effects of noise on the hearing of industrial workers have been published recently by the Bureau of Women in Industry of the New York state department of labor. Tests were made with an audiometer on 1040 workers in seven factories and in two groups of clerical workers. Deafness was found in 246 or 23.7 per cent. Of this number 91 had some history of ear trouble that might have caused the deafness. Only 155 remained therefore in whom the condition might be related to their work. The greatest number of deafened persons were found in the group of workers subjected to the greatest amount of noise. Most of these, 66 out of 96 worked in a factory making tin cans in a room dominated by the noise of a stamping machine. In the 155 cases of deafening without any history to account for it 69 occurred in persons between 21 and 30 years. Of workers employed less than one year, 6 per cent were deafened without a history of disease to account for it. Among those employed between one and five years the percentage was 16.1 but in the next group those exposed for between five and ten years it was 12.8. Thereafter the percentage increased up to 26.9 per cent for those exposed for more than twenty-five years. The investigators pointed out however, that advancing age was probably a factor in this increase. At the conclusion of the study the investigators recommended (1) that tests of hearing be made on all new employees, (2) that periodic examinations be made where there is an undue amount of noise, (3) that certain types of machines be isolated and (4) that adequate ventilation be provided to remove vapors which were found to have an effect on the hardening of cerumen in the ears of workers.

New York City

Society News—Dr Joseph Colt Bloodgood, Baltimore will address the Medical Society of the County of Queens, March 24, instead of March 6, as noted in THE JOURNAL, March 14.

Resolution Opposing Coffey-Humber Cancer Institute—A resolution adopted in January by the New York Academy of Medicine, deprecating a proposal by the Better Health Foundation to establish a laboratory at Huntington, L. I., for research on the Coffey-Humber treatment of cancer with extract of suprarenal cortex was made public at a hearing, March 10, before a special committee of the state board of social welfare. The academy believed the establishment of such an institute to be an unwise move. Citing the experience that followed the announcement of this treatment in California, when many hopelessly ill persons abandoned treatments known to be beneficial and made great sacrifices to get to the Coffey-Humber clinic yet were not much benefited the academy recommended that these physicians follow the plan used by Banting and Best in establishing the value of insulin. This would place the Coffey-Humber extract in the hands of competent scientists and physicians who would, under the best

facilities, conduct scientific studies of the effects both clinically and experimentally. The resolution concludes:

A few patients carefully observed with detailed study of all reactions will yield far more valuable results than a less controlled use of the remedy on a number of patients too large for such a study. For these reasons the New York Academy of Medicine further believes that there is no need for the creation of a new experimental and clinical institute for this study, since ample facilities are already available in established cancer institutes and hospitals.

Hospital News—A compressed-air lock for the treatment of compressed air disease will be added to the equipment of Metropolitan Hospital on Welfare Island, having been provided for with a \$15,000 appropriation by the board of estimate, March 6. It will be used also for the study of the effect of compressed air on the human system, and will be operated under the direction of Dr. Thomas McG. Lowry.—The \$2,000,000 ten-story Columbus Hospital was officially opened, February 11. It has been under construction for two years and has a capacity of 250 beds. It was opened for patients March 1.—The department of urology of the New York Hospital recently received \$197,081.80 by the will of the late Gustavus L. Lawrence. Proceeds from this sum will be applied to the needs of the department and will be kept in a separate fund to be known as the Gustavus L. Lawrence Fund.—The Jacob Fuhs Auditorium in the pathologic institute of the United Israel Zion Hospital, Brooklyn, was formally dedicated March 1 with an address by Dr. Frank D. Jennings, representing the Medical Society of the County of Kings. Dr. Fuhs, who died in 1927, was for many years on the staff of the hospital.—A new laboratory building for clinical diagnosis and research in pathology, bacteriology, pharmacology and physiology was dedicated, March 5, at the Long Island College Hospital, Brooklyn. The building constructed at a cost of \$125,000, is the gift of Dr. John Osborn Polak, professor of obstetrics and gynecology in the medical college. Dr. Willard C. Ripple, dean of the Columbia University College of Physicians and Surgeons, made the dedicatory address.

NORTH CAROLINA

Society News—A Radiological Society of North Carolina was recently organized at Durham with Drs. John K. Pepper, Winston-Salem, as president; William T. Raney, Jr., Fayetteville, vice president; and Major I. Fleming, Rocky Mount, secretary. The next meeting will be held during the annual session of the Medical Society of the State of North Carolina at Durham, April 21. It is intended that two scientific meetings will be held each year and an annual business meeting during the session of the state medical society.

Bills Introduced—S. 280 proposes to amend the law requiring male applicants for marriage licenses to present certificates from physicians certifying the absence of venereal disease, of tuberculosis in infectious stages and of epilepsy by requiring such a certificate from both male and female applicants. S. 333 proposes to permit any two or more counties to establish a district hospital home for the aged and infirm in lieu of separate county homes. H. 716 proposes to allow physicians to prescribe medicinal liquor under the same general restrictions as appear in the Volstead Act. H. 692 proposes to prohibit the distribution of hypnotic drugs except on written prescriptions of licensed physicians. Hypnotic drugs are defined to include "sulphonmethane, sulphonethylmethane, diethyl sulphonedrethylmethane, diethyl barbituric acid (barbital), and chloral hydrate or any solution thereof containing 20 grains or more to the fluidounce."

OHIO

Dr. Reid to Succeed Dr. Heuer at Cincinnati—Dr. Mont R. Reid, associate professor of surgery in the University of Cincinnati College of Medicine, was appointed head of the department of surgery by the trustees of the university, March 3. He will succeed Dr. George J. Heuer, who will go to New York at the end of the present academic year to become surgeon-in-chief of the New York Hospital and professor of surgery in Cornell University. Dr. Reid graduated from the Johns Hopkins University School of Medicine in 1912.

Bills Introduced—S. 263 proposes to provide medical and surgical treatment and hospital care for indigent persons in university hospitals and to utilize such hospitals in the care and treatment of wards of the state. S. 263 to amend the workmen's compensation act proposes to define injury to include any injury received in the course of employment or any disability caused by illness or disease which arises out of or is the result of such employment. H. 585 proposes to create a board

of chiropractic examiners and to regulate the practice of chiropractic, defined as the science of diagnosing, locating and correcting interference with nerve transmission and physiological response without the use of drugs or major surgery."

Society News—Dr. Louis J. Karnosh, Cleveland, addressed the Toledo Academy of Medicine, February 6, on 'The Neurology of Emotions'.—Dr. Joseph A. Capps, Chicago, addressed the Cleveland Academy of Medicine, February 20, on 'Plural Pericardial and Peritoneal Pain'.—Dr. William H. Weir, 'Technic of Hysterectomy'.—Dr. Edwin von Graff, professor of obstetrics and gynecology at the faculty of medicine, University of Vienna, Austria, conducted clinics at the meeting of the Eighth District Medical Society, Zanesville, February 19.—Dr. Leonard A. Strick spoke on spinal anesthesia before the Lorain County Medical Society, February 10. Dr. Gerald S. Shibles, Cleveland, among others, addressed the society, January 13, on etiology of the common cold.—Dr. Louis N. Katz, Chicago, addressed the Hancock County Medical Society, Findlay, February 4, on the use of the electrocardiogram in clinical medicine.—Dr. Frank Semsheimer, Cincinnati, spoke on prevention and early diagnosis of contagious diseases in children before the Clark County Medical Society, Sidney, February 11.—Dr. Roy W. Scott, Cleveland, presented an address before the Summit County Medical Society, Akron, March 5, on 'Heart Disease: Chief Barrier to Longevity'.—Dr. George M. Curtis, Chicago, addressed the Academy of Medicine of Cincinnati, January 19, on 'Chloride Metabolism in Relation to Surgery'.—Dr. Harry E. LeFever, Columbus, addressed the Fayette County Medical Society, Washington Court House, January 8, on diagnosis and treatment of head injuries.—Drs. Percy S. Pelouze, Philadelphia, and Harold N. Cole, addressed the Academy of Medicine of Cleveland, March 20, on 'Gonorrhea and Its Treatment' and 'Bismuth Salts in the Treatment of Syphilis,' respectively.

PENNSYLVANIA

Bill Introduced—S. 324 proposes to regulate the practice of chiropody and create a board of chiropody examiners. The practice of chiropody or podiatry is defined as the diagnosing of all ailments of the human foot, and the medical, surgical and mechanical treatment of such ailments except the correction of deformities requiring the use of the knife, amputation of the foot or toes or the use of any anesthetic other than local.

Society News—Dr. Morris A. Slocum, Pittsburgh, among others, spoke on 'Cultivation and Sterilization of Fly Larvae and Their Use in the Treatment of Chronic Osteomyelitis' before the Allegheny County Medical Society, March 17.—Dr. Thomas B. Holloway, Philadelphia, delivered the Stewart Memorial Lecture, March 10, before the Pittsburgh Academy of Medicine on 'Certain Pathological Conditions About the Chiasm with Special Reference to Pituitary Adenoma'.

Philadelphia

Society News—Dr. Alfred F. Hess, New York, gave the Frederick A. Packard Memorial Lecture before the Philadelphia Pediatric Society, March 10, on 'Ultraviolet Irradiation Irradiated Ergosterol and Irradiated Foods'.—Dr. Collier F. Martin delivered the weekly seminar lecture under the auspices of the Philadelphia County Medical Society, March 13, on 'Diagnostic Symptoms in Anorectal Disease'.—Dr. Warren H. Lewis, Baltimore, presented a motion picture of tissue cultures of human and mammalian tumor cells before the Pathological Society of Philadelphia, March 12.—The Philadelphia Psychiatric Society devoted its meeting, March 13, to a discussion of schizophrenia; speakers included Drs. James Hendrie Lloyd, Joseph C. Yaskin, Bernard J. Alpers, Edward A. Stricker and Carl D. Bond.

SOUTH CAROLINA

Bills Introduced—H. 375 proposes to provide dental clinics for the public schools of the state and to authorize the employment of school dentists. H. 554 proposes to discontinue the school of pharmacy at the University of South Carolina after the scholastic year 1930-1931. H. 573 proposes to allow physicians to prescribe intoxicating liquors under the same general restrictions as appear in the Volstead Act.

Society News—Dr. Horton R. Casparis, Nashville, Tenn., addressed the South Carolina Pediatric Society at Columbia, January 14, on 'Recent Advances in the Treatment of Infectious Diseases'. Other speakers included Drs. Thomas D. Dott, Jr., Columbia, on 'Intra-cranial Injuries of the New-

Born" and Richard M. Pollitzer, Greenville. "Acute Lymphatic Leukemia." Dr. Edward W. Barron, Columbia, was elected president of the society.

SOUTH DAKOTA

Bill Introduced—H 323 proposes to levy annual occupational taxes of from \$10 to \$50 on licensed and practicing physicians and surgeons.

Hospital News—St. Mary's Hospital, Pierre, which was recently dedicated has a capacity of 100 beds, and was built at a cost of more than \$200,000.

TEXAS

Bills Introduced—S 421 proposes to authorize the establishment of a tuberculosis sanatorium for Negroes in a location to be selected by the board of control. S 483 proposes to create a commission to inquire into and report on the number, distribution and condition of crippled children and physically disabled adults in the state. S 488 proposes to record liens to hospitals and physicians on any insurance benefit due persons treated by physicians or hospitals. H 202 proposes to create a board of chiropractic examiners and to regulate the practice of chiropractic. H 295 to amend the law requiring the licensing of maternity hospitals and homes, proposes to make it a misdemeanor (1) to operate such an institution without a license from the state board of health, (2) to sell or traffic in babies, and (3) to maintain in said institutions tuberculous or mentally unbalanced persons, or persons suffering from infectious or contagious diseases. H 407 proposes to create the Dallas State Hospital, to be composed of the Dallas Psychopathic Hospital and the State Cancer and Pellagra Hospital.

UTAH

Society News—Dr. William L. Bender, San Francisco addressed the Box Elder County Medical Society, Brigham recently, in a joint meeting with the Cache Valley and Weber County Medical societies on "Anterior Poliomyelitis and Encephalitis."—Dr. Charles C. Johnson, Salt Lake City, presented a paper on "Pharmacologic and Toxic Effects of Sodium Nitroprusside" before the Utah County Medical Society, Provo recently.

Bills Introduced—S 43 to amend the workmen's compensation act, proposes to authorize employers to enter into agreements respecting hospital benefits and accommodations and medical and surgical services nursing and medicines, and services to be furnished of licensed practitioners not using drugs or medicines." H 151, to amend the narcotic act, proposes to make it unlawful for any person to unlawfully procure or make, execute, sign, or to advise, assist, or aid in the false or fraudulent execution of any order or prescription, or to forge the name of any duly licensed physician, dentist, veterinarian or other duly authorized person to any order or prescription for any of the narcotics or drugs enumerated in the act.

VIRGINIA

University News—The Stuart McGuire Lecture for 1931 will be given, March 25, at the Medical College of Virginia, Richmond by Samuel Alfred Mitchell, Ph.D., professor of astronomy and director of the Leander McCormick Observatory at the University of Virginia on "Eclipse Hunting in the South Seas." This lectureship was established in 1930 in recognition of the services to the college, to medical education and to surgery of Dr. McGuire, who is emeritus professor of surgery.

WASHINGTON

Illegal Practitioner Fined—C. Irving Grieger was arrested in Chubbuck, February 17, charged with practicing medicine without a license. He was fined \$25 and costs. Grieger who also posed as a chiropractor, has appealed, it is reported.

New Hospital Bans Drugless Healers—The drugless healers of Seattle and King County were informally notified February 26 it is reported that they had lost their right to be permitted to practice in the new \$2,500,000 Harborview Hospital, which was dedicated on the same date. The new city and county institution has a 450 bed capacity.

Bills Introduced—S 184 proposes to authorize counties or counties and cities to operate hospitals jointly. S 204 to amend the chiroprody practice act, proposes that a person fitting recommending or selling corrective shoes arch supports or similar mechanical appliances shall not be deemed to be

engaged in the practice of chiropody. S 228 proposes to make it unlawful to deliver to the same person in any twenty-four hour period more than 4 ounces of sweet spirit of niter.

WEST VIRGINIA

Personal—Dr. Andre Crotti, Columbus, Ohio, delivered the first annual memorial lecture of the Medical Review Society, Huntington January 29, given in honor of the late Dr. Claude Aubrey Latham on goiter. The Medical Review Society is described as a local organization founded ten years ago by local members of the Cabell Medical Society, the membership being restricted to twenty and by invitation. Dr. Latham's death was the first in the organization and a series of public lectures was instituted as a memorial.

Bills Introduced—H 377 proposes to require male applicants for marriage licenses to file an affidavit that they are free from contagious venereal diseases and that they believe their proposed mates to be likewise free. In the event that the marriage license clerk is not satisfied as to the matters alleged in said affidavits he may require certificates from duly licensed physicians. H 51 proposes to create a board of barber examiners and to regulate the practice of barbering. S 146, to amend the chiropody practice act, proposes to define chiropody as the medical, mechanical and surgical treatment of the ailments of the human hand or foot (except the amputation of the foot hand toes or fingers) without the use of anesthetics other than local. It is to include also the fitting or recommending of appliances, devices or shoes for the correction or relief of minor foot ailments provided, that the act shall not be deemed to prohibit the sale of foot appliances and remedies by retail dealers. H 359 proposes to require all hospitals, under certain circumstances, to treat the indigent sick and to allow any hospital rendering such service to set off the charge against taxes due on real estate or personal property.

WYOMING

Society News—Dr. John R. Nilsson, Omaha, addressed the Sweetwater County Medical Society recently on fractures. He also showed a motion picture on "Bloodless Cesarean Section." Dr. Russell H. Kanable, Basin, recently addressed the society on "Diagnosis and Treatment of Incipient Tuberculosis."

GENERAL

Society News—At the annual meeting of the Pacific Coast Surgical Association at Victoria, B. C., February 27-28, Dr. Rex E. Smith, Los Angeles, was elected president. Drs. Charles M. Fox, San Diego, Calif. and Raymond E. Watkins, Portland, Ore., vice presidents and Dr. Edgar L. Gilcrease, San Francisco, secretary reelected. The seventh annual meeting of the association will be held, Feb. 26-27, 1932, at Coronado, Calif. There will be two days of clinics in Los Angeles preceding this meeting. Dr. James Tate Mason, Seattle, gave an illustrated address at the annual association dinner on "Seattle's First Physician."

Diplomas Lost—Two graduates of the University of Tennessee College of Medicine, Drs. Charles D. Brunt, New Castle, Pa., and Bedford F. Floyd, Jr., Kilgore, Texas, have recently reported the loss of their diplomas. Dr. Brunt reported that his diploma, issued June 10, 1929, disappeared from his room in a hospital after he had placed it under some magazines to flatten out a wrinkled corner. Dr. Floyd stated that his diploma, issued June 16, 1927, was left at the home of his mother in Senatobia, Miss., in June, 1928, and when he looked for it in December, 1930, he was unable to find it. Dr. Floyd's Tennessee license to practice medicine was lost at the same time.

Itinerary to Philadelphia Meeting of Otolaryngologists—The American Board of Otolaryngology is sponsoring a special itinerary beginning with its examination in Los Angeles, May 27, and concluding with the meeting of the American Otolaryngological Association in Briarcliff, N. Y., June 17-19. The itinerary, via the Union Pacific System and Wabash and Pennsylvania railroads includes the meetings of the Pacific Coast Society in Los Angeles, May 28-30; the American Laryngological Rhinological Otolaryngological Society, St. Louis, June 3-5; American Bronchoscopic Society, St. Louis, June 6; American Medical Association, June 5-12 in Philadelphia; American Laryngological Association, Atlantic City, June 15-17; and the American Otolaryngological Association in Briarcliff, N. Y., June 17-19. Further information may be obtained from Dr. William P. Wherry, secretary, American Board of Otolaryngology, 1500 Medical Arts Building, Omaha, Neb.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Feb 21, 1931

Recrudescence of Cerebrospinal Fever

Cerebrospinal fever, which has recently been reported in various parts of the world, has now been observed in England. Periodic increases in the incidence of this relatively rare disease are not unusual. The total notified cases in England and Wales in 1929 was 650, which is above the average, and in 1930, 660. In the present year 230 cases have already been reported among civilians. They have shown a scattered distribution over thirty-six counties, but there has been some concentration in the West Riding of Yorkshire, where seventy-nine cases have occurred. In the army a local prevalence of influenza has been associated with a number of cases of cerebrospinal meningitis. Thus since January 31, thirteen cases have been notified in the Aldershot Command and six among the Air Force at Uxbridge. At Aldershot, with the exception of a fatal case in a nurse in attendance on patients suffering from the disease all the cases occurred in men who had had influenza. They belonged to various units and did not come from any one regiment or building. Eight of the Aldershot cases have been fatal. In a London barracks a guardsman has died from the disease. The frequent association of the disease with military establishments is a curious phenomenon for which no explanation is forthcoming since the hygiene of the buildings and the good health and physique of their occupants are undeniable. However, during the war years it was found that when more room was given the men to live and sleep in the incidence of the disease fell.

The Rule Not to Move a Patient Before Giving First Aid

A schoolmistress recently was run down by a motorcycle in London and, while lying on the ground and being attended, she was run into by an automobile. She appeared to be suffering from concussion and had scalp and face wounds. While the attendant was bandaging the wounds as she lay on the roadway an automobile was driven through the onlookers, crushed the patient, and carried her several yards. She died two hours after admission to a hospital. The driver, a captain of artillery, was arrested for being drunk while in charge of an automobile and was tried for manslaughter but was acquitted. The jury said that there was negligence on the part of the ambulance men, while the judge added that it was wrong practice to bandage people in the middle of the road. Sir William Willcox, the toxicologist, who was called on behalf of the defendant, gave a similar opinion. The Central Public Health Committee of the London County Council, which controls the ambulance service, has made a reply stating that this opinion is not supported by medical teaching or by those who have experience of ambulance work. It maintains that a principle of first aid is that the person seriously injured should be allowed to remain in the place where he has fallen until examined by a physician or a person skilled in first aid. It is held to be dangerous to move a patient who has sustained severe head or spinal injuries before first aid has been given, and in this case a local physician who saw the patient after the first accident was of the opinion that she should not be moved. Representatives of the two ambulance organizations—the Order of St. John and the British Red Cross Society—expressed to the committee the same opinion which is laid down in their textbooks. It is added that the number of street accidents dealt with by the council's ambulance service in 1930 was 34,529 that this method had been employed ever since the ambulance service was started and that the present case was the first in which a second accident occurred while the

patient was being treated. Therefore notwithstanding the opinions expressed at the trial, the council will keep to the established practice, which is in accord with current medical opinion and the advice of the council's own medical officers. They consider that it would be highly dangerous to issue an instruction to the ambulance staff that the injured should not be treated where they fall.

Another Attempt of Osteopaths to Obtain Recognition

In the house of commons a labor member has introduced a bill to regulate the practice of osteopathy and to prescribe the qualifications of osteopaths. He said that recognition had already been granted in forty-seven of the states of the United States. The bill was opposed by another labor member, a physician, who argued that the proposed standard was not sufficient to guarantee the public against serious mistakes. However, the bill was read a first time. A few years ago a similar attempt was made but the bill was defeated by a considerable majority. However, the fact was revealed that the osteopaths had a large number of supporters in the house. There is toleration in this country unlike the continent for all sorts of irregular practitioners but it does not seem likely that two orders of practitioners for the treatment of all maladies will be recognized.

The London Clinic and Nursing Home

Probably no city in the world presents such a contrast in the provision for illness as London. On the one hand there are the voluntary hospitals where the poor have at their disposal every resource of modern medicine and surgery and the services of the best specialists of the day. Nothing comparable can be obtained outside the hospitals except by the rich. There remains the great middle class whose circumstances or whose pride remove them from the hospital class who have to put up with makeshift accommodation and are excluded from all the advantages of equipment and coordination found in the hospitals. The advance of medical science has meant more and more elaborate equipment and greater and greater need for coordination of services and therefore has aggravated the evil. Modern specialist treatment requires a building specially adapted for the investigation and treatment of disease, organized on modern lines and provided with laboratories and x-ray equipment. After much effort, extending over twelve years such a building containing rooms to suit all classes of paying patients is now nearing completion. The great difficulty was that there is a strong feeling against the financing of nursing homes by physicians, while no financial group was prepared to undertake a risk in which physicians refused to share. A solution agreeable to both parties was reached. A company was formed to erect a building consisting of a nursing home, for the financing of which the company would be responsible and a number of consulting rooms, the lease of which the physicians might purchase without breach of medical ethics. This assured the company of satisfactory medical support without involving the physicians in financial responsibility for their affairs. The building is in the neighborhood of Harley Street the consulting center of London. Special care has been taken to protect the patients against noise and vibration. The steel uprights that support the building are embedded in a system of padding which insures complete absence of vibration. The building has been designed with great care and according to the best expert views. To obtain the latest information on modern equipment and organization a committee visited the most modern hospitals of Europe and America and it is claimed that the clinic will be an advance on anything in existence. A wide range of accommodation between small single rooms and private suites will meet the varying requirements of patients. A special feature is provision for maternity cases and for children. For

the former a special floor has been specially equipped with arrangements to insure absolute quiet and privacy. The children will be accommodated in a special wing, so arranged that each child can, if necessary, be accompanied by its own family nurse, while a solarium opening directly on the south side of this wing will give every opportunity for fresh air and sunshine. The nursing staff will be so large that special nurses can be supplied at a low charge. There will be two resident medical officers. But it is part of the design that every patient can remain in touch with his own physician. In connection with the group of physicians, who occupy the consulting rooms, there is a plan of combined work, so that patients of moderate means may be saved multiple consultations, which involve so much expenditure of time and money.

Research on Prevention of Infantile Paralysis

Dr E. Weston Hurst, of the Lister Institute of Preventive Medicine, has injected the virus of acute poliomyelitis into the horse and found that the immune bodies produced in its blood will protect monkeys inoculated with the disease. As monkeys are much more susceptible to the disease than man it is concluded that a means of preventing the rendering of the latter immune has been discovered. Dr James Collier, a neurologist, announced at a meeting held at St. George's Hospital that this was an epoch-making discovery.

PARIS

(From Our Regular Correspondent)

Jan. 28, 1931

Experiments with Bacteria on Bullets

For a long time, it was thought that bullets from a revolver and, especially, projectiles from an army rifle, could not transport infectious germs because the projectile was sterilized by the high temperature to which it was raised by the friction of the air during its transit. Infections found in wounds caused by projectiles were attributed to bits of clothing carried along by the projectile or to germs present on the skin. Dr. Piedelievre, agrégé professor of legal medicine at the Faculté de Paris, with the collaboration of Dr. Guy, performed a series of experiments, which he reported recently before the Société de médecine légale. They used the bullets of three different types of army rifles and a Browning revolver of heavy caliber. The bullets were sterilized in a flame and then covered with a coating of cultures of *Bacillus prodigiosus*. The barrel of the weapon was sterilized by first firing off a blank cartridge. The targets were packages of carded cotton wrapped in three thicknesses of paper and then sterilized in the autoclave. Before the shooting, the outside wrapping was slit open on three sides and folded back like a shutter, and then folded down again after the shooting, before the package was transported to the laboratory. The fibers of cotton along the path of the bullet furnished regularly positive cultures after implantation in liquid or solid culture mediums. *Bacillus prodigiosus* was chosen by reason of its being innocuous. But Dr. Piedelievre, who is planning to perform these experiments with other microbes, is convinced that proof has been furnished that projectiles may be infectious, irrespective of the length of the trajectory and their degree of heat in transit. Back of the packages of cotton were placed steel plates against which the bullets struck, and it is well known that, by the impact heat is produced, so that the temperature reaches several hundred degrees; nevertheless the cotton adjacent to the impact was infected. Doven pointed out twenty years ago that when a person fires a bullet into his head that reaches the brain the prognosis is not especially unfavorable if the revolver and the bullet are new. The wounds are always fatal if the person with suicidal intent used a revolver that had been lying in a drawer for a long time, where the bullets had become charged with dust.

Difficulties in the Removal of Tattoo Marks

When the recent war opened, tattooing had not been practiced, for a century, except among troops stationed in Africa, who acquired the habit from the Arabians. As these troops have been composed of men compelled, as a disciplinary measure, to perform military service outside of France, and since, after completing their period of army service, many of them continued their bad practices, tattooing became a stigma of evildoers. At the same time it furnished the police a means of identifying criminals. During the war, however, many soldiers amused themselves by getting tattooed. Most of these men, after the war, sought some means by which the tattoo marks could be removed as they were rather ashamed when they went to the public baths or the seaside bathing beaches. Likewise, many evildoers had the same desire, in order that the means of identifying them might be removed. It is extremely difficult to remove tattoo marks. All the minute particles of lampblack introduced with the India ink with which the needle of the tattooer is charged have to be removed from the skin, one by one. When undertaken by skillful dermatologists—even though they may have made a specialty of such removals—it is a long and delicate process, and the final result is usually that white cicatricial spots have replaced the bluish spots of the tattooing. The best procedure is perhaps that introduced by Dr. Variot, which consists in applying a vesicatory, removing the epidermal membrane from the formed blister and rubbing the denuded skin vigorously with a strong solution of silver nitrate. One region after another is taken up; if the tattooed area is large for the inflammatory reaction produced is considerable. The number of persons desiring to have tattoo marks removed has given rise to a type of charlatanism. Dr. Locard, director of the police technical laboratory in Lyons, has published the results of an inquiry into the fraudulent practice by which charlatans take advantage of their clientele. One charlatan created an organization with representatives in all parts of France. He employed a lotion of secret composition in which Dr. Locard recognized the presence of phenol. The results were lamentable, but the victims, for fear of ridicule, did not complain. One, however, who had been burned, with resultant large sloughs leaving scars, brought suit. The police discovered at the office of the healer a supply of nitric acid. As a result of his inquiry, Dr. Locard demands that operations for the removal of tattoo marks be left entirely to physicians and that such operations performed by a person who is not a graduate physician be considered by the courts as illegal practice of medicine.

Opening of a Museum by Public Welfare Department of Paris

Dr. Mourier, director of the Assistance publique of Paris, has announced to the municipal council the opening of a museum in which will be exhibited many interesting things belonging to the archives of the department, some are several centuries old. The department has inherited equipment from all the ancient hospitals of the capital. Many persons formerly bequeathed their possessions, including their homes and all that they contained, to the poor—that is to say, to the hospitals and to the Assistance publique. Naturally only articles that had some documentary, artistic or historical interest have been preserved. One will find in the museum rare pieces of furniture, paintings by old masters, religious books with costly colored prints derived from the chapels of hospitals, and from the pharmacies a collection of pottery of all epochs which, from point of variety and richness, has no counterpart elsewhere. There is also a whole library of documents, acts, and the like which were formerly piled up in storerooms but which now are available to the public for inspection and study. A fire in 1871 during the Paris insurrection destroyed a part of this material but what has been preserved has inestimable value. The museum will be installed in the buildings of the Pharmacie centrale des

hospitals, which is the former Hotel des Miramiones, being located on the Quai de Gesvres, on the bank of the Seme, directly opposite the Notre Dame cathedral

The Pasteur Institute of Algeria

The Pasteur Institute of Algeria, which was created in 1910 published recently a report on its activities. During 1929, 126 missions of a scientific or technical nature were carried out, by the personnel of the institute, in the Sahara region, France, Italy and the three departments of Algeria. The institute performed nearly 10,000 medical, veterinary or agricultural analyses, the rabies service treated 2,229 patients, 523 of whom belonged to the department of Algiers, 696 to the department of Constantine and 992 to the department of Oran, including 18 from Morocco. Besides the antirabic vaccine supplied to patients, the institute delivered 3,148,131 doses of vaccine, serums, ferments and various microbic products, 1,417,611 for medical use, 1,551,561 for veterinary use and 178,859 for agricultural use. About 22,000 persons, mostly children, have been given quinine treatment. During the campaign of 1929, 126 inquiries or journeys were made, 24 lectures were delivered, and nearly 1,000 chemical analyses were performed.

BERLIN

(From Our Regular Correspondent)

Feb. 9, 1931

Increase in Diphtheria in Europe

Professor Burgers, director of the hygienic institute in Königsberg, reports in the *Deutsche medizinische Wochenschrift* that since the low ebb of diphtheria in Germany in 1923 (19,599 cases) the curve has risen to 38,604 for 1930 up to October 25. There may be said to be an epidemic incidence of diphtheria, especially as there must be a large number of unannounced cases, as against the reduced number of susceptible children compared with the prewar period. The question arises as to whether this is a transient increase or the rising tide of a large wave. As to the causes of this manifestation, the range of diphtheria morbidity in other countries deserves attention. A survey reveals that, in Germany and in most other countries, the low ebb of diphtheria was recorded in 1923. From then on there has been a distinct upward trend of the figures. In Holland, however, the figures have fluctuated, in Japan there was a distinct upswing in 1929, and in New York State the curve is downward until 1926, though 1927 shows a distinct increase.

As an important combative measure against the spread of diphtheria, Burgers urges parents to note the first signs of throat disorder, if any children are suspected, to keep them away from other children and to summon a physician. It is equally important that the physician should make a diagnosis on the basis of the clinical observations and not wait for the results of the bacteriologic diagnosis, especially in cases in which early injection of serum is necessary. The question is to the value of prophylactic inoculation, in addition to antitoxin, and the method of immunization by inoculating with the Lowenstein ointment or with other preparations, merits closer attention. As such a method is likely to become more popular with the public and is less expensive than other methods, it would likely be easier to carry out, from a practical point of view. But one must never allow the idea to gain ground that any known immunization method will afford absolute protection. Only the aggregate of all combative measures will help to reduce the number of victims which is still much too high.

Infantile Paralysis in Baden

The outbreak of infantile paralysis that occurred in Alsace in late summer 1930 extended in some instances to the neighboring regions across the Rhine, although the morbidity was not as great as in Alsace. The most important observations in this field were made by Professor Moro, the director of the Heidelberger Universitäts Kinderklinik. In Baden 180 cases were notified

and it is estimated that, if the unrecognized and the abortive cases are included, the total morbidity would be three times as great. Forty-seven cases were admitted to the clinics, there was only one death. Bananas play no part in the transmission of the disease, nor in cattle, feathered animals or flies be justly incriminated (note the severe epidemic in winter in Sweden). The causative agent is probably invisible and it is resistant to cold. Cultures kept for six years under refrigeration were still virulent. The incubation period in monkeys is from seven to ten days. The disease occurs chiefly in early childhood, 70 per cent of the cases were in children from 6 months to 5 years old. The rural population is more susceptible. Regions that are visited by an epidemic are spared the next time. After contact with the virus, immunity may be acquired by unrecognized infection. Only rarely does a patient infect a brother or a sister, in a series of seventy-one cases there was not a single instance of such infection among siblings. In outbreaks in buildings or in families, the several cases develop simultaneously, it is not a question of contagion through contact. The patient himself plays a subordinate part in the transmission. The disease appears to spread chiefly through healthy or mildly ill intermediate agents. The status lymphaticus constitutes a predisposition to the disease. Disinfection of excreta is necessary because of the theory that the disease may be spread through the drinking water, and also on account of the observation that the infection sometimes follows the river courses. The virus is present equally often in the intestine and in the nasopharynx. Ingestion infection has not to be sure, been demonstrated. In threatened regions, intramuscular injection of adult's blood or serum, for example, 20 cc. of fresh blood from either parent or of mixed blood from the two parents is recommended as a simple, harmless and effective form of prophylaxis. Protection for a period of about four weeks may be expected.

Study Tour to East Africa

Prof. F. K. Kleme of the Robert Koch Institute for Infectious Diseases in Berlin received an invitation from the missions of the white fathers in former German East Africa to undertake a two-year study tour of that region. The invitation with the aid of the *Notgemeinschaft der deutschen Wissenschaft* and the *Zentralkomitee zur Bekämpfung der Tuberkulose*, was accepted. The purpose of the tour was to extend and to supplement former observations on trypanosomiasis and to solve certain questions of theoretical importance. As Kleme reports, the present mandatory government combats the disease chiefly by removing the natives from infested regions and settling them in healthy localities. The disease is thus kept under control and a sudden increase is scarcely to be feared. Since the discovery of Bayer 205, Kleme considers that no further progress in the treatment of trypanosomiasis has been made. Veterinary medicine, however, has attained further progress in the treatment of cattle that have become infected since Hans Schmidt succeeded in preparing a nonirritable form of antimony and potassium tartrate.

Two Thirds of Population Beneficiaries of Health Insurance

The number of persons who were holders of health insurance during the year 1929 rose to nearly 23,000,000. To this number must be added the members of families who are insured through the head of the family, which makes about as many more, thus today about 46,000,000 persons, or more than two thirds of the population of Germany, are the beneficiaries of health insurance. According to the records, the number of sick benefit associations has decreased still further. There were only 7,362 as compared with 7,426 the previous year. On the other hand, the number of members was increased by about 300,000. This denoted a slowing up in the increase of insured persons, the chief reason for which lies doubtless in the increased number of persons out of work. But the total receipts of the sick benefit

associations have increased more rapidly than the membership, owing to wage increases and higher monthly dues. The average annual dues were 98.23 marks (\$23) per member, or 61 per cent more than the previous year. The total contributions exceeded the sum of 2,000,000,000 marks (about \$500,000,000). The expenditures increased in the same proportion as the receipts, and also exceeded \$500,000,000. The principal item of expense was the cost of sick benefits, which amounted to 1,740,000,000 marks (\$435,000,000), or 86.5 per cent of the total expenditures 78 per cent more than in 1928. Also the administrative costs have risen of late years, though the percentage for 1929 was about the same as in 1928. The excess of receipts over expenditures for 1929 was about 800,000,000 marks (\$200,000,000). The reserve funds have been increased, during the past three years, by about 1,500,000,000 marks (\$375,000,000). It is apparent, therefore, that social health insurance in Germany is a financially sound undertaking.

Death of Professor Trendelenburg

The death of Paul Trendelenburg, professor of pharmacology and director of the Berlin Pharmacologic Institute, after a protracted illness, at the age of 46, is announced. After studying under W. Straub, he became, through the reputation of his publications, *ordinarius* at an early age, at first in Rostock and later in Freiburg, where he succeeded Straub when the latter accepted a call to the University of Munich. In 1927, he removed to Berlin as the successor of Heffter. His work on the prescribing of medicines passed through several editions in a short time. But, more particularly, the first volume of his work on the hormones has met with wide approval from scientists. In nobility of character he excelled as he did in the quality of his scientific contributions. He was always ready to serve when called on in the interest of science and the practice of medicine, and he always welcomed to his institute students from foreign countries. Germany and science have lost in him a notable investigator and teacher.

ITALY

(From Our Regular Correspondent)

Jan 15, 1931

Annual Meeting of Orthopedic Society

At the twenty first annual session of the Società italiana di ortopedia in Rome under the chairmanship of Prof. Dall' Vedova the first official paper, "The Surgical Treatment of Tuberculosis of the Knee," was presented by Drs. Mezzani and Fusari of Trieste. The speakers brought out that although the surgical method has been condemned and the conservative method adopted by the majority of surgeons, in osteo articular localizations of tuberculosis, cases of surgical intervention have not been lacking. The chief objection to the conservative methods is that they require a long time. The speakers reviewed various methods, old and new, used in the treatment of tuberculosis of the knee. Synovectomy, if performed as the sole intervention in arthritis, is an insufficient operation which experience has long since condemned. In synovitis it has always given worse results than are secured by heliotherapy. In gonitis tuberculosa in young men arthrectomy with arthrodesis has been recommended by Hibbs and Sever. This was formerly advised by Codivilla and confirmed by proofs of recoveries presented by Giuliani at the Congress of Surgery in 1927. This resection was said to be economical and takes account of the special conditions of the skeleton in evolution on that account they prefer usually the typical resection. In osteoarthritis of the adult, one must place confidence in resection. The speakers prefer to intervene at once instead of trying first a conservative treatment. For amputation a limited field is reserved today. Amputation should be resorted to (1) to get rid of a focus of infection in a patient in advanced tuberculous toxemia (2) to control a grave suppurating mixed infection and (3) when resection has failed. They explained the modern methods

of conservative surgery, among others, that of Menciére, the subcutaneous evacuation of Vignard, the Robertson-Lavalle operation, the lateral splints of Dupuy De Frenelle. The common characteristic of all these types of intervention is the use of the bone graft. The speakers tried periarterial sympathectomy in five cases with unsatisfactory results. They consider that this method is not effective in osteo articular tuberculosis. In closing Drs. Mezzani and Fusari said that in synovitis the treatment should remain conservative, in pure osteitis, exercise may arrest the disease and prevent an articular invasion, in osteoarthritis the therapeutic program will depend on the age of the patient. In children the treatment will be conservative, in adolescents should be applied, in selective cases the new conservative methods. In adults, surgical treatment should at present be regarded as the rule, the operation of choice being resection. In advanced age amputation is the only course left.

Several further communications were presented. Delitalà of Venice reviewed his experience in forty six cases of tuberculosis of the knee. In forty-two cases he practiced resection and the patients recovered with ankylosis, in four cases, amputation was necessary.

Marghiano of Genoa reported good remote results (observed after fifteen years) secured with an autoplasmic bone graft in a case of gonitis. Pasquali of Bologna recited the results obtained at the Istituto ortopedico Rizzoli in the period 1899-1930, during which 156 resections were performed in 383 cases of tuberculosis of the knee. The statistics show that in tuberculosis of the knee resection is the preferred treatment in adults, whereas it is contraindicated in the child. The posture of the resected knee that presents the most advantages functionally and esthetically is that in slight flexion (about 5 degrees).

During the general discussion that followed, Calandra of Palermo spoke on sympathectomy in the treatment of tuberculosis of the knee which is widely employed in his institute. He contended that when careful judgment is used in the selection of cases sympathectomy combined with other modes of treatment will accelerate recovery. He thus treated favorably thirty cases out of thirty-two.

Prosthetic Apparatus and Orthopedic Appliances

The official paper on the second topic Recent Progress in Prosthetic Apparatus and Orthopedic Appliances was presented by Prof. M. Camurati of Bologna. For prosthetic apparatus of the lower limbs the so-called European idea (the use of leather) has been abandoned since 1915 in favor of the American plan (the use of wood). The wooden limbs are durable, are easy to apply, and render excellent service. In the final prosthetic apparatus the weight bearing foot must be proximate to the median plane of the body and the superposition of the articular axes of the lower limb must be such as to assure the greatest stability to the wearer. In wooden prosthetic apparatus there are the temporary type and the permanent or esthetic type. There are many kinds of prostheses that have great value for example the hospital prosthesis in the manufacture of which little wood is used but chiefly fascii of plaster. The value of a prosthetic apparatus depends on its functional capacity which is determined not only by its intrinsic qualities but also by the character of the patient more especially his mental state and the nature of the stump. The speaker described certain types of prostheses of the inferior limb used at the Istituto Rizzoli in Bologna 13,277 specimens of which were supplied during a period of thirteen years. As prosthesis of the upper limb, the speaker prefers from the standpoint of practical utility, the more simple apparatus in which one finds also the best adhesion of the appliance to the stump.

Galcazzi of Milan asked the opinion of the official speaker on hard aluminum which has come into vogue in Germany and France. Camurati on the basis of experience in the laboratories of the Istituto Rizzoli with other appliances made of

aluminum and hard aluminum, expressed the view that these materials do not have sufficient resistance. Galeazzi demonstrated his mechanical apparatus for the treatment of torticollis and cervical scoliosis. Formi of Bologna reported on massive autoplasmic treatment in the management of pathologic fractures resulting from bone cysts. Tancredi of Rome demonstrated his personal contribution to the study of the physiopathology of the respiratory mechanics in scoliosis.

After numerous other communications, the convention adjourned, having chosen Milan as the next meeting place. Professor Galeazzi was elected president. The topics on the program will be (1) The Present Indications for Orthopedic Treatment in the Sequels of Infantile Paralysis, and (2) Bone Cysts.

The Death of Professor Cattaneo

Prof. Cesare Cattaneo, director of the Clinica pediatrica of the University of Milan and of the Children's Hospital, died suddenly. He was president of the Società italiana di pediatria and one of the chief supporters of the idea of considering nripiologia as a distinct specialty.

International Congress of Urban Hygiene

The second Congresso internazionale di tecnica sanitaria e igiene urbanistica will be held at Milan April 20-26, 1931, under the chairmanship of Prof. G. Lenno, senator. The program will be divided into the following sections: (1) physiology, human pathology and microbiology in their relations to sanitary engineering; infections in the city and in the country; disinfections; (2) urban sanitary technique: hygiene of the street and of transportation facilities; protection against the noise of the street and the vibrations of houses and of industrial establishments; (3) sanitary technique of construction work, hospitals and sanatoriums, apartment houses; (4) sanitary technique and hygiene in the rural districts and in the colonies; (5) sanitary technique in the shops and laboratories; elimination of industrial refuse; and (6) sanitary legislation, creation and functioning of municipal officials in charge of the hygiene of homes and public buildings in the large cities; social provisions. An exhibit of equipment will be organized in connection with the congress.

The Red Cross During the Past Two Years

Senator Filippo Cremonesi, president of the Italian Red Cross, has published an account of the activities of that body during the years 1928 and 1929. In connection with the crusade against tuberculosis four sanatoriums were enlarged and reorganized, and 1,889 patients were admitted in 1928 and 2,084 in 1929. Aid was given to tuberculous persons of Italian origin residing in foreign countries. In child welfare, in addition to having increased the work of numerous preventoriums, summer colonies and ambulatoriums for children, the administration of the Sanatorio di Ariocia was assumed. Likewise, the sanitary service in the rural schools of central and southern Italy was organized. During 1929, 1,837 children in the antitrichinosis dispensaries were given assistance. The crusade against malaria was intensified, partly as a result of agreements reached with the general management of the public health service and with the Opera nazionale dei combattenti. By government order all the first-aid services connected with other similar associations were absorbed by the Red Cross. The government has entrusted to the Red Cross the sanitary defense of the civil population against asphyxiating gases. The problem of the transportation of the sick and wounded was studied and solved by the adoption of a new type of auto ambulance. The preparation and work of voluntary nurses have been improved. The number of schools for them has been increased to sixty-three. All the nurses, voluntary and professional, have been brought into one organization called 'l'Amghia delle infermiere' for the purpose of completing their training.

TURKEY

(From Our Regular Correspondent)

Ankara, Feb. 1, 1931

The Certification of Specialists

In the last twenty years the faculty at Haydar Pasha and the Gulhane Hospital, which is a teaching hospital, has produced a number of specialists who have supplemented their studies by graduate work at European institutions, where they have received special certificates. While most specialists have devoted years of study to their special line, there are others who have worked at it for only a short time. The latter have increased in number, and in order to provide the public with efficient service the council of state drafted regulations, which have been adopted by the government.

Specialist certificates having been issued by institutions approved by the Turkish medical school or by the ministry of health and social assistance, or those issued by a hospital or laboratory of a foreign country, recognized by the Turkish medical faculty, are divided into three main groups, clinical, laboratory or hygiene specialist certificates. There are nine clinical specialties: internal medicine, surgery, mental and nervous diseases, diseases of the eye, nose, ear and throat, venereal and skin diseases, pediatrics, obstetrics and gynecology, and urology. There are six laboratory specialties: bacteriology, pathologic anatomy, medical chemistry, legal medicine, radiology and physical therapy. To procure a specialist certificate in one of these groups at least three years, of laboratory specialists at least two years, and of hygiene specialists a total of four years of special study are required. The four years of the hygiene specialists are spent in the study of bacteriology, parasitology and infectious disease, and in hygiene laboratories. Those occupied with bacteriology and parasitology spend three years. Time spent in study previous to the publication of this regulation is recognized. Physicians who have been permanent assistants in a hospital or laboratory, and those who before receiving their diploma have held internships at the Turkish medical faculty, may take the examination for the hygiene specialist certificate after three years, for the medical and surgical specialist certificate after two years and for laboratory and other specialist certificates after one and a half years.

Candidates are examined at the medical school in the presence of the professors under whom they have studied and a jury of two other professors elected by a committee of the medical faculty. Examinations at other institutions approved by the ministry of health and social assistance are held by a jury to be elected from among the clinical or laboratory heads of those institutions; this jury is subject to the approval of the ministry of health. The examinations are to be theoretical and practical, the former in writing. Candidates who have procured specialist certificates in foreign countries must present themselves for examination before a jury of two professors to be elected by the faculty committee. Physicians holding a specialist certificate that has been procured in Turkey and who at the same time hold one that has been procured in a foreign country are to have the latter recognized without another examination. Specialist certificates of candidates who have spent the required time in special study at clinics or laboratories of institutions other than indicated by the medical faculty or the ministry of health are not valid unless recognized by an institution indicated by the medical faculty or the ministry of health. Candidates with certificates not recognized must spend three months in a clinic or laboratory indicated by the medical faculty or the ministry of health and then be examined before a special jury. Physicians who before the publication of these regulations have, without interruption, done specialist work at an institution and who do not possess a specialist certificate and who within one year from the publication of these regulations present themselves before a board of examiners with their certificates and diplomas are to receive the specialist certificate without having to go in.

for another examination if their knowledge and skill have been investigated and not found wanting.

Certificates are made out either to candidates skilled in one of the medical branches and capable of directing a clinic or laboratory of that branch, or to specialists who engage in private practice. Only these two kinds of specialist certificates are made out. Physicians who do not possess the first mentioned certificate are not permitted to conduct the clinic or laboratory of a government, municipal or private institution. The ministry of health may issue to physicians whose certificates permit of private practice only (if those physicians have spent three years of uninterrupted study in their special branch) a license that will permit them to perform the specialist duties of their own clinic or laboratory. Certificates that have been issued before the date of publication of these regulations, by the medical faculty or by the clinics of the Gulhane Hospital, the graduate school for army physicians, or from recognized foreign institutions and which have been in accordance with these regulations, are valid.

CAPE TOWN

(From Our Regular Correspondent)

Jan 29, 1931

Hospitals Supplied with Radium

The year that has passed has seen little change in the medical profession in the Union of South Africa. The acquisition of adequate supplies of radium by the three provinces of the union Transvaal, Natal and the Cape has been made possible by public subscription, initiated, thanks to the support given by the lay press by individual physicians. The department of public health declared that radium was a matter falling exclusively within the province of the hospitals with which public health as a department, has nothing to do. Local funds were established with the object of purchasing small quantities of the element, it being supposed, by the public, the government and the profession alike, that radium could be handled and cancer patients treated with radium by any general practitioner. Those who knew something about the matter vigorously protested against this interpretation of the situation and urged that the Australian example should be followed and that the government should purchase and control the radium. The minister of public health, Dr Malan, who although a doctor of theology and not of medicine is sympathetic toward the profession and has on many occasions followed the hints given him in health matters, found himself unable to fall in with this suggestion and the government has not contributed a penny toward the radium funds. These have been raised by the public, at the urge of medical men. Indeed, the publicity given to the radium campaign has shocked some of the older colleagues, who still imagine that a medical man must not give his opinion on anything appertaining to medicine, and especially to treatment, outside the privacy of the sick room or the consulting room. A prominent colleague, who quite rightly, had on returning from Europe given an interview to the lay press in which he had frankly detailed what was being done overseas in radium therapy, was indicted before our medical council on a charge of advertising. Fortunately the council saw no evidence of advertising in what it deemed to be a matter of public duty and said so quite cheerfully. Medical men here are not yet educated to realizing that the public demands knowledge of certain facts and that it is as futile for the doctor to refuse to give these facts as it would be for the ignorant lay journalist to supply them second hand. All reputable daily papers in the union now have friendly medical men who advise them on medical matters and this policy of asking the profession to give its views on matters affecting both it and the public can be heartily commended. The result of the publicity given by individual physicians to radium therapy has been that our main hospitals are now well supplied with radium and that the public has been roused to a sense of its responsibilities.

On the other hand there has been a falling off in the interest displayed by the profession in what may be called medical politics. This is perhaps due to the fact that there is at present no urgent matter on which the profession is likely to be consulted. Old age and invalidity pensions are not on the legislative program, and the vigorous campaign planned to deal with them has been abandoned. From the published reports of the meetings of the federal council which may be looked on as the mouthpiece of the profession one gets the impression that nothing of really serious import has been dealt with during the year. The council established a committee on general practice which might have been of considerable value but the committee appears to have done nothing during the year, and to the lay public the federal council is practically unknown. The medical council on the other hand, which is a statutory body containing several lay members is well known and has lately published its regulations framed under the medical dental and pharmacy act. These regulations deal with the registration of medical men and students.

Poverty and Disease

The past year has been the driest and most trying year that the union has experienced since 1910. The rainfall has been phenomenally low and many farmers have been unable to raise anything. The general depression has affected all sections of the community but in the drought stricken areas the medical practitioners are especially affected as they are more often called on to attend patients sickness having increased, while their fees are never paid. In one district a physician has received no payment on account from private patients for many months. All he has had to exist on is the monthly check from the government his honorarium as district surgeon. The ensuing poverty has reacted on the health of the people, particularly in country areas and in the poorer urban quarters which are being thronged by vagrants emigrating from the country. Malnutrition caused by bad foodstuffs and insufficient vitamin content of the food is common. Pellagra is on the increase. Xerophthalmia, formerly rarely seen, is now common enough. Acrodynia is not uncommon, and where it occurs its prognosis here is apparently much less favorable than elsewhere. The juvenile population in the poverty stricken districts subsist on maize meal and sweet potatoes. They suffer extensively from carbohydrate overfeeding. The native population, which lives almost exclusively on mealies and has given up largely, its nutritious millet meal is badly off. The death rates among children appears to be slightly on the increase but that, in the circumstances is less to be regretted than is the general lowering of the standard of vital resistance, which is almost everywhere apparent. It has been repeatedly urged that the government should devote special attention to a study of the factors that militate against the health of the European and native child, but so far there does not seem to be any co-ordination of child welfare effort. Much energy and money are being wasted in dealing with this matter on haphazard lines.

The Law and the Quacks

The medical dental and pharmacy act forbids any one who is not registered as a practitioner to do anything, 'special appertaining' to the practice of medicine. Heretofore it has been almost impossible to prosecute a quack of whom there are many for South Africa is probably a *dominion paradise* for the faith healer the Christian scientist and the 'patent medicine' vender, and supports its own brand of the genus in the shape of the Kaffir witch doctor. Lately the supreme court at Pretoria has allowed the appeal of a quack from a magistrate's court decision. The judge declared that where the quack did something for the purpose of humoring his victims in order to induce them to accept treatment the price for which would vary according to the affluence of those undergoing it it could not be said that he was doing something appertaining to the practice of medicine. This particular quack gave his victim a

confection of dates and senna, but the judge held that that was not necessarily "medicine." He told another victim that his eyes were poisoned 'by injections for malaria' and charged 10 guineas for restoring his sight. The judge did not think that the sight testing was "appertaining to the practice of medicine" and said so. The judgment has given rise to some discussion and it is felt that a test case would be desirable. At present the uncertainty as to what the words of the act really mean allows the quack practically a free hand.

UKRAINE

(From Our Regular Correspondent)

Odessa, Jan 16, 1931

Popularizing Cremation in Ukraine

The first crematory was opened in Moscow in 1920. It was impossible to open a crematory before the revolution, as the holy synod—the supreme ecclesiastical authority in the Russia of the czars—was opposed to it because of religious considerations. The Moscow crematory did not begin functioning until some years after it was officially opened. About 1930 the idea of building crematories in the Ukraine arose. The government has already given its sanction to the projects of crematories in Charkoff and Odessa and in Charkoff a crematory is already being built. The price of a cremation will be about one rouble (50 cents), which includes the cost of a wooden coffin, special clothing and boots. Before the cremation takes place the relatives may perform all the religious rites they wish. Afterward the ashes are placed in a special urn, which the relatives of the deceased may take away with them or leave at the crematory in a columbarium. The experience of the Moscow crematory shows that usually cremation is not accompanied by any religious rites, the most popular funerals are the so called civil funerals, in which the clergy does not take any part.

The Antireligious League has organized this year a circulating exhibit with the aim of popularizing in the Ukraine the idea of cremation. This exhibit displays much interesting material and is accompanied by special lecturers, who speak on cremation. It has visited Odessa and will visit all the Ukrainian centers. A large number of persons have attended the exhibit.

The Health Resorts of Odessa

Odessa, and particularly its mud health resorts, the Koujalmik and Hadjibei 'limans,' occupy a prominent place among the health resorts of the Ukraine. They are situated on the shores of firths—arms of the sea separated from it by a flat elevation of the ground. As a result of evaporation due to the constant influence of the air and the sun, the water in these firths—the "rapa"—is saturated with a concentrated solution of salts, having from 45 to 27 Baume degrees, and contains about 765 Gm of salt in 1 liter of water.

The bottom of the firth is covered with a thick layer of mud or slime, formed as a result of the dying out of the Black Sea's ancient fauna, as well as of the rising of the sea level and of its water becoming more salty with the access of waters from the Mediterranean Sea during the glacial era. This slime consists chiefly of numerous products of the putrefaction of organic matter and bacterial bodies. The process of formation has continued until even our time, as is proved by the presence of plenty of hydrogen sulphide on the bottom of the firth. From its slimy origin the mud of the firths, liman mud, unlike the turfy mud in western Europe, is extremely plastic, oily, thick and quick to oxidize.

A long time before Odessa was founded the local population used this mud for the healing of all kinds of chronic diseases. The treatment of patients with liman mud was recognized by the medical authorities in the fifties of the last century, from which time dates the construction of the first special clinics and hospitals in Odessa. The mud and rapa are used for general and local baths, applications and gynecologic tampons. The

following diseases are said to be affected by means of the liman mud: chronic and subacute arthritis, chronic gynecologic diseases and chronic and subacute inflammatory processes of the peripheral nervous system. The results of the treatment with liman mud are seen from the following items. Out of 1,000 arthritic patients 90 per cent were much improved, 40 per cent of them were able to move their joints, and 40 per cent of the patients suffering with all kinds of diseases of the peripheral nervous system got much better.

This is a matter of great importance because the number of arthritic patients is constantly increasing. According to the *Deutsche Krankenlassen Statistik* (Zimmer), the number of those patients is 82 times greater than that of tuberculous patients. The number of patients receiving their course of treatment on the Hadjibei and Koujalmik limans is increasing every year. In the summer of 1923 there were 1,500 patients and in 1930 there were 9,000.

Mortality in the Ukraine

The improvement in the living conditions of the Ukrainian people as a result of the October revolution led to a decrease in the mortality of the population and to the increase of childbirth. Mortality in 1928 was 36 per cent less than in 1913. This is particularly obvious in the two large industrial centers of this country. The mortality rate of 1927 as compared to that of 1910 is 57.3 per cent lower. As may be seen from the accompanying table, the child mortality has considerably decreased.

Infant Deaths in Each Thousand Births

		1910	1927	1927 Per centage in comparison with 1910
Town	Country			
Union of Soviet Socialist Republics	Moscow	24.1	13.5	49.8
	Charkoff	24.2	11.0	45.4
	Minsk	27.8	12.6	55.8
Warsaw	Poland	19.2	14.4	75.9
Riga	Latvia	17.9	14.1	80.3
Kowno	Lithuania	21.7	17.0	78.2

This table contains statistics from six large cities which were part of the former Russian empire. As may be seen, in towns of soviet Russia the child mortality has considerably diminished in comparison with the child mortality in towns of neighboring countries.

These items show that the Ukraine makes great progress as to the improvement of the health of its population. It must be also noted that there is a high birth rate in the soviet union, the natural increase of the population having risen 40.8 per cent from 1913 to 1928.

With the further growth and development of prophylactic and medical establishments, as well as with the rise of the population's cultural level, mortality in the Ukraine will diminish more and more.

Marriages

LAMAN T. MEEKS Indianapolis, to Miss Marie Olsen of Omaha, Neb., in Chicago, February 14.

THOMAS L. BENNETT, JR. to Miss Mildred Jackson, both of Florence Ala. February 17.

LOUIS PERLIN Richmond Va., to Miss Lillian Levin of Baltimore, February 15.

ARTHUR H. GRAHAM Opelika Ala., to Miss Henrie Elma Gholson, February 21.

R. L. ALVAREZ Galesville, Wis., to Miss Hazel Wanhass of Sparta, February 17.

Deaths

John Conrad Hemmeter * Baltimore University of Maryland School of Medicine Baltimore 1884 emeritus professor of clinical medicine at his alma mater, member and past president of the American Gastro-Enterological Association formerly on the staffs of the Bryn Mawr Hospital and the University Hospital, author of "The Special Pathology and Treatment of Diseases of the Digestive Organs," "Diseases of the Stomach," "Diseases of the Intestines," and others, aged 67 died, February 25, of carcinoma of the stomach

Henry Harrison Briggs * Asheville N C Yale University School of Medicine, New Haven, 1897 member of the American Academy of Ophthalmology and Oto-Laryngology American Laryngological, Rhinological and Otological Society American Ophthalmological Society and the American College of Surgeons, chief of staff at the Mission Hospital, aged 59 died, February 6 of heart disease, while at sea on the S S *Duchess of Bedford*

Charles Everett Stanley, Durham Conn, University of Pennsylvania School of Medicine Philadelphia 1876 member of the Connecticut State Medical Society and the New England Society of Psychiatry for many years on the staff of the Connecticut State Hospital, Middletown, aged 79, died in February

Francis Edward Victor Shore * Des Moines Iowa University of Michigan Medical School, Ann Arbor, 1886 member of the American College of Surgeons, past president of the Polk County Medical Society aged 67, died, February 9, in the Mercy Hospital, of arteriosclerosis

Melbourne Edward Armstrong, Bridgetown, N S Canada Medical Department of the University of the City of New York 1892 formerly county medical health officer for many years on the staff of the Annapolis County Asylum aged 64 died, January 1

Hugh Kidder, New York New York Homeopathic Medical College and Hospital, New York 1896 formerly instructor in clinical medicine at his alma mater, at one time on the staff of the Metropolitan Hospital, aged 61, died February 16, in the French Hospital

Charles John Colwell Oliver Hastings, Toronto Ont Canada, Victoria University Medical Department Coburg 1885 LKQCP Ireland 1886 past president of the American Public Health Association, medical health officer, aged 71 died, January 17

Roy Coutts, Toronto, Ont, Canada, University of Toronto Faculty of Medicine 1914 served during the World War on the staff of the Christie Street Hospital aged 46 was killed February 6, when the car in which he was driving was struck by a trolley car

William Blakeway Hanna * Mass Mich Hahnemann Medical College and Hospital Chicago, 1889, past president of the Ontonagon County Medical Society, formerly county coroner and bank president aged 67, died, February 15, of carcinoma

Ernest Harold De Muria * Brooklyn Columbia University College of Physicians and Surgeons New York 1920 aged 35 on the staffs of the Brooklyn Eye and Ear Hospital and the Brooklyn Hospital, where he died, February 19, of septicemia

William A Horton, Grayson, Ky Medical College of Ohio Cincinnati 1891 member of the Kentucky State Medical Association on the staff of the Stovall Memorial Hospital aged 64, died, February 19, of pneumonia following influenza

Paul Fitzgerald, Maplewood, N J, Medical Department of Columbia College New York 1894 associate medical director of the Prudential Life Insurance Company aged 62 was killed February 21, in Newark, when struck by a trolley car

John Christian Montgomery, Charlotte N C Medical Department of the University of the City of New York 1891 formerly professor of anesthetics North Carolina Medical College aged 62 died, February 18 of heart disease

Charles Colhoun, Rutherford, N J Medical Department of Columbia College New York 1890 member of the Medical Society of New Jersey for sixteen years member of the board of health of Rutherford aged 67 died in February

Richard B Henderson, Franklinton N C University of Maryland School of Medicine, Baltimore, 1884, member o.

the Medical Society of the State of North Carolina aged 73, died February 19 in the Duke Hospital Durham

Charles A R Campbell, San Antonio Texas Medical Department of the Tulane University of Louisiana New Orleans 1899 member of the State Medical Association of Texas aged 65 died February 20 of septicemia

Julius Jones Rockford Ark Vanderbilt University School of Medicine Nashville Tenn 1884 member of the Medical Association of the State of Alabama, aged 72, died, February 12 of endocarditis and nephritis

Preston Powell, Adair Iowa College of Physicians and Surgeons Chicago 1889 member of the Iowa State Medical Society aged 63 died in February in the Iowa Methodist Hospital Des Moines, of heart disease

Leon George Banton * Island Falls Maine Columbia University College of Physicians and Surgeons New York 1920 aged 36 died January 22 in the Aroostook Hospital, Houlton of ethyl chloride poisoning

Michael Frederick Brondstetter * Mount Pleasant Mich University of Michigan Medical School Ann Arbor, 1911, proprietor of a hospital bearing his name formerly county coroner aged 45, died February 14

Paul Hullhorst, Topeka Kan State University of Iowa College of Homeopathic Medicine Iowa City 1889 formerly lecturer on materia medica at his alma mater, aged 64, died February 5 in the Christ Hospital

Harry Mead Warner * Hempstead N Y University of Pennsylvania School of Medicine Philadelphia 1898 aged 57 died February 16 in India during a world cruise as the result of a fall from a train

Lewis Broadwell Brasher, Denver Gross Medical College Denver 1891 Civil War veteran aged 86 died January 26 in the Fitzsimons General Hospital of chronic pulmonary tuberculosis and myocarditis

James Rufus Gordon, Jamestown N C Baltimore Medical College 1891 formerly member of the state legislature and of the state board of health aged 73 died February 20 of cerebral hemorrhage

Mary S Sanderson, Amherst Mass University of Michigan Medical School Ann Arbor 1893 aged 67 physician in charge and owner of the Rangeview Sanitarium where she died, January 10

Charles Henry Weissberger * New York Medical Department of the University of the City of New York, 1885 on the staff of the Hospital for Joint Diseases aged 71, died February 16

John M Clarke, Burlington Vt University of Vermont College of Medicine Burlington 1873 aged 84 died January 17 in the Mary Fletcher Hospital, of pneumonia, following a fractured leg

Aime Noel Leblanc, Gardner Mass School of Medicine and Surgery of Montreal 1889 for twenty two years member of the board of health aged 66 died Nov 22, 1930 of heart disease

William Preston Copeland, Eufaula Ala Bellevue Hospital Medical College New York 1870 member of the Medical Association of the State of Alabama aged 85 died February 17

James Thomas Elliott, Denver, Ohio Medical University Columbus, 1897 member of the Colorado State Medical Society served during the World War aged 61, died February 21

Harvey Shoemaker * Philadelphia University of Pennsylvania School of Medicine Philadelphia 1886 chief of the medical service at the Landau Hospital aged 65 died February 2

Robert E B Bledsoe, McCamey Texas University of Texas School of Medicine 1898 member of the State Medical Association of Texas, aged 57 died February 1 of heart disease

Patrick A Shannon New Brunswick N J I R C S Ireland 1874 aged 79 died February 18 in St Peter's Hospital of injuries received when he was struck by an automobile

A Kemper Gilmer Lebanon Va Medical College of Virginia Richmond 1896 aged 57 died February 18 in a hospital at Abingdon Va of heart disease and pneumonia

Charles L Reason * Grafton Ohio Medical Department of Western Reserve University Cleveland 1899 aged 63 died February 15 in the Elvira (Ohio) Clinic of heart disease

Hans Th Kide Haerem, Story City, Iowa, University of Oslo Norway 1898 member of the Iowa State Medical Society aged 58 died, February 15, of nephritis

Charles Bradford McAbay @ Pittsburgh, University of Pennsylvania School of Medicine Philadelphia, 1901, aged 55, died, February 5 of cerebral hemorrhage

Alfred Benjamin Hart, Jr @ Owatonna, Minn., St Louis University School of Medicine 1925 aged 29, died January 4, in the City Hospital of cerebral embolism

Walter Alva Fletcher, Valley View, Texas Baylor University College of Medicine, Dallas, 1927, aged 40 died, February 3 in a sanatorium at Gainesville

Charles B Bateman, Centralia Ill., Keokuk Medical College College of Physicians and Surgeons 1904 aged 53, died February 8 of cerebral hemorrhage

Alexander Augustus Cirkler, Minneapolis University of Berlin, 1893 aged 65 died, Dec 30 1930, in Los Angeles, of acute lobar pneumonia and nephritis

Samuel Wesley McDowell @ Pittsville Pa., Jefferson Medical College of Philadelphia 1884 aged 76, died suddenly January 30 of heart disease

Henry Preston Clarke, Tulsa Okla. Memphis (Tenn.) Hospital Medical College 1887 aged 71, died February 15, in Gervy, Okla. of heart disease

Eri Perry Rice, Chicago Rush Medical College, Chicago, 1889, member of the Illinois State Medical Society, aged 71, died, February 21, of pneumonia

John Thomas Sullivan, Boston Dartmouth Medical School Hanover N H, 1893 aged 62 died, February 7, in the City Hospital of pneumonia

Jay R Gould @ Niagara Falls N Y University of Buffalo School of Medicine, 1915, aged 38 died February 14, in a local hospital of pneumonia

John Frank Laval, Evansville Ind. Rush Medical College Chicago 1919 aged 37, died, February 6, in the Deaconess Hospital, of pneumonia

Ralph M Jones, Denver (licensed, Colorado 1917), aged 45 died, Dec 28 1930 in Los Angeles, of general peritonitis, cholecystitis and pancreatitis

Pinckney French, St Louis Miami Medical College Cincinnati, 1873, formerly bank president, aged 78, died, March 4, of cerebral hemorrhage

Gerson Bencion Citron, New York, Baltimore University School of Medicine, 1900, aged 56, died, February 20, in the Mount Sinai Hospital

James A Cross, Battle Creek Mich., Detroit Homeopathic Medical College, 1874, aged 78, died, February 17, of cerebral hemorrhage

John F Rannels, Chicago, Louisville (Ky.) Medical College, 1879, aged 81, died, March 6, of mitral insufficiency and arteriosclerosis

James Thom Hope, Alexandria Ont Canada McGill University Faculty of Medicine, Montreal, Que., 1901, aged 56 died January 4

George Mackey Laing @ Cicero, Ill., L R C S, Ireland 1889 aged 61, died, February 9, of wounds received when shot by bandits

Joseph Bryant Hardy, Reno Nev Marion Sims Beaumont Medical College, St Louis, 1902, aged 52, died, February 19, of pneumonia

William R Bentley, Morristown Ind Chicago Homeopathic Medical College, 1886, aged 79, died, February 16, of pneumonia

Joseph Sutherland Graham, Toronto, Ont., Canada, University of Toronto Faculty of Medicine, 1902, aged 50 died, January 6

Joseph Evan Hall @ Alexandria Ind Medical College of Indiana Indianapolis, 1881 aged 72 died February 16, of heart disease

Philip M Bell, Sherrodsville Ohio Toledo Medical College 1899 aged 70 died suddenly, February 13, of heart disease

Joseph Hyman Green, Toronto Ont Canada University of Toronto Faculty of Medicine 1925 aged 32 died Oct 17 1930

John C Lebrecht @ St Louis St Louis Medical College, 1882 aged 71 died February 23 of heart disease

Bureau of Investigation

W H Y

A Fraudulently Exploited Nostrum Debarred from the Mails

"W H Y" has been described by its exploiters as a "100 per cent pure, concentrated food beverage" It is marketed from Arizona Cal by the Bartlett Nu Products Corporation, a concern that was incorporated in 1920 under the laws of Arizona and having the following officers

C M BARTLETT President Treasurer and General Manager

A L McCULLOUGH Vice President

MRS G M BARTLETT Secretary

G M Bartlett claims to be the "discoverer" of the formula for W H Y the ingredients of which are said to be extracts of raisins, figs, walnuts, peanuts, barley, wheat and celery

Readers of this department of THE JOURNAL may remember that on November 24, 1928 there was published an abstract of

a Notice of Judgment against W H Y The government, at that time had declared that the claims on the trade package of W H Y, to the effect that the product aids digestion, assimilation and elimination and that it was a health sustaining food and that it was recommended by physicians and dietitians everywhere and that it was 'the cup of life and would feed your glands and give you strength' were false and fraudulent These charges were admitted and judgment of condemnation and forfeiture was entered

Since then, presumably, Mr Bartlett has been shrewd enough to remove from the trade package the fraudulent claims that brought him in contact with the food and drug

officials at Washington He has, however, apparently continued to make equally false and fraudulent claims in such of his advertising matter as does not go with the trade package As W H Y is sold through the United States mails, this has brought Mr Bartlett in conflict with another branch of the United States government—the postal authorities who have recently declared the exploitation of W H Y fraudulent and debarred it from the mails

The case of the Post Office Department against this humbug is described in the memorandum of the Hon Horace J Donnelly, Solicitor for the Post Office Department to the Postmaster General, in which Mr Donnelly recommended the issuance of a fraud order From this memorandum we learn that the Bartlett Nu Products Corporation is capitalized for five million dollars, that advertisements of the product have been carried in grocery catalogues on billboards and in circulars and folders sent through the mails 'sucker lists' have been furnished the concern by grocers and the individuals in these lists have been circularized the company has spent, on an average, \$20,000 a year advertising this nostrum

BY THIS IS



W. H. Y.

Saves Lives of Lost World Flyers

LOST for eleven days in the frozen wastes of one of the Aleutian Islands Alaska after their plane had crashed on a mountain hidden by fog Major Martin leader of the world flight expedition which left Clover Field March 1, and his mechanic sergeant Harvey astounded a whole world by winning the rush to Port Moller when even searching Timos and trappers had given them up for dead

MAJOR MARTIN'S first message after wreck in Alaska
To Washington
Our existence is due to CONCENTRATED FOOD and nerve

To His Wife
CONCENTRATED FOOD from a Los Angeles man saved our lives
It was W H Y—the perfectly balanced life sustaining concentrated food drink that all the World Flyers carried with them on their round the world history making trip

Some specifically fraudulent claims are taken up in detail, thus

Claim 1—That W H Y, when prepared ready to drink, furnished 460 calories to the teaspoonful

The nutrition experts for the Post Office Department showed that actually the product contained from 7 to 9 calories to the teaspoonful!

Claim 2—That W H Y contained the elements required for feeding the human body and that it was rich in vitamins

Government chemists found, as a matter of fact that W H Y contained no proteins or fats and therefore could not have any of the fat soluble vitamins, A and D. Furthermore, tests made in the vitamin laboratory of the Department of Agriculture failed to disclose the presence of vitamin B. Expert testimony was produced to show that the methods of preparing W H Y were such as to militate against the preservation of any vitamins that might have been present in the original ingredients

Claim 3—That children might be reared on W H Y alone

Mr Donnell's memorandum brought out the fact that it would be impossible to raise children on this preparation, that the stuff might cause severe diarrhea in many cases, and that it had no properly balanced food value

Claim 4—That W H Y was the only food recommended by the National Aeronautical Association as the official food for aviators

The government brought out that there is no such organization as the National Aeronautical Association!

Claim 5—That W H Y won the grand prize and gold medal award in a worldwide contest held at Limoges, France, in August 1929

The government proved that no medal or diploma was awarded to this concern at any fair or exhibition held at Limoges in 1929

Claim 6—That Baby Peggy, the motion-picture star lived six months on W H Y alone and was restored to perfect health by its use

The government produced statements from the parents of Baby Peggy showing that at no time was the product, W H Y, used by Baby Peggy

Claim 7—That the exploiters had arrangements with hospitals, sanitariums and doctors for distributing W H Y

The government brought out the fact that when asked for names to support this claim, Bartlett gave the names of Frances B Tyson M.D., of Leonia, N. J., and E. R. Lamberton M.D. of Los Angeles Cal. Mrs. Tyson is the sister of G. M. Bartlett and, according to the Solicitor's memorandum, had promised her brother to further the sale of the product, but admitted she did not know the formula and that, as a member of the medical profession, she would not allow her name to be used in any way in endorsing it. Dr. Lamberton, according to the Solicitor's report is not at the present time connected with the Bartlett concern but has admitted that he was, at one time, considering joining it

Claim 8—That Bartlett employed in connection with the business, two registered physicians

The names of the two physicians as given by Bartlett were Drs. Frances B. Tyson and E. R. Lamberton mentioned above neither of whom according to the evidence has been employed by Bartlett

As a result of this investigation, Solicitor Donnell declared the scheme one for obtaining money through the mails by means of false and fraudulent pretenses and recommended the issuance of a fraud order against the Bartlett Nu Products Corporation and its officers and agents, as such. The Postmaster General issued such an order February 24, 1931

Correspondence

ENDORSEMENT OF CREMO ANTISPIT ADVERTISING CAMPAIGN BY PUBLIC HEALTH WORKERS

To the Editor—You or your staff have undoubtedly seen my name and the names of some other public health officials in connection with the current advertising campaign of Cremo cigars.

I regret this occurrence very much as I am sure the other doctors also do.

When I endorsed their letter I thought that I was merely giving my opinion of the spit tipping practice and did not think they would exploit me in a nation wide publicity campaign. Had I known this was their intention I should not have endorsed the letter. I did not receive any remuneration of any kind for the endorsement. A young man living in town asked me to write an opinion of the spit tipping practice which I did. He then said that if I would give him a sheet of my paper with letterhead he would type it which he did. When he brought in the letter I very carelessly signed my name without carefully reading the contents.

I understand I am not trying to make an alibi as of course I have no one to blame but myself for my unthoughtfulness and hurry. Personally I shall be on guard in the future but I also would like to see others put on their guard which you can do through the medium of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

This kind of advertising is dirty to say the least and there are many in the advertising business who stand against the soliciting of testimonials in this manner.

O. FLINT CLOUGH, M.D., Poultney, Vt.

THE GALACTOSE TOLERANCE TEST

To the Editor—The discussion in THE JOURNAL (February 7, p. 459) between Dr. Blankenhorn of Cleveland and Dr. Loewy of London relative to the galactose tolerance test concerns a technique which we have studied for the past three years at the Jewish Hospital. Our conclusions regarding it are to appear in the *Archives of Internal Medicine*. I am in complete accord with Dr. Loewy, barring minor differences. I believe that the galactose tolerance test of Bauer stands today as our only positive means of identifying toxic hepatitis early, a condition whose identification becomes paramount in the painless (clinically obstructive) jaundice seen in persons past 30 or 40 years of age. Is it carcinoma of the head of the pancreas or silent stone in the duct or is it a so-called catarrhal jaundice? Should the patient be operated on early and spared the imminent danger of hemorrhage if operated on later? Can the patient be spared an operation in the presence of an undesirable symptom, jaundice? In helping to answer these questions the galactose tolerance test renders inestimable service. More than fifty cases of jaundice have now been studied and in no instance has the test been found wanting in separating the toxic or infectious jaundice from the obstructive and hemolytic types. One of the cases reported by us in the *Medical Clinics of North America* (January, p. 955) illustrates the points in question.

Regarding Dr. Blankenhorn's letter may I suggest that merely quoting textbooks that have failed to give due consideration to the test does not constitute damaging evidence. It is rather a reflection on the textbooks.

The article by Snell, Greene and Rowntree does not mention galactose, fructose having been used in their experiments. However, in a preceding article by Greene, Snell and Walters

they say "We shall summarize here the theoretical basis, technique and present status of the various tests employed in this work. Detailed reports will later be made with regard to the changes observed in a series of 800 cases, comprising various states." They do not even infer in their discussion of the carbohydrate tolerance tests whether galactose was tried but say that "glucose and galactose have proved unsatisfactory for clinical use." They too, have apparently come to a "literary" conclusion that the galactose tolerance test is worthless. This is certainly not the type of evidence to be offered.

The real difficulties that have beset the galactose tolerance test are twofold. First the physiology of the liver has not been properly considered in the evaluation of this test. The carbohydrate function of this organ is vital. Nature has accordingly provided both an adequate protection and reserve. The protective element is manifest in the extraordinary regenerative capacity of the liver cells.

The galactose test is concerned with the carbohydrate function of the liver. We cannot expect to find this function deranged in mild liver damage (adequate reserve) or in chronic liver damage (great regenerative power). These are the reasons why the galactose tolerance test is of no value in chronic liver disease and in jaundice not directly due to liver cell damage.

Should the liver cells be acutely and diffusely damaged we should expect and do find evidence of deranged carbohydrate function. Since these types of liver damage are nearly always accompanied by jaundice we have in this test an ideal method for identifying cases of toxic or infectious hepatitis. We have also been able to diagnose such cases of diffuse damage without jaundice by means of this test.

The second cause for the difficulties this test has encountered lies largely with the originator. Bruer first presented this test as a means of detecting cirrhosis of the liver and only later realized its significance in toxic hepatitis. Efforts have been made to utilize this test in chronic liver conditions, in which cases it has no reasonable place. In brief, a valuable test has been long left unused simply because we did not understand its limitations.

HARRY SHAY, M.D., Philadelphia

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted on request.

SKIN DISEASE CAUSED BY COLD

To the Editor—C. N., a truck driver aged 32 has complained for three weeks of tingling itching sensations in the skin of the feet, knees, buttocks, hands, ears and face when these parts become slightly cold. Relief is immediate and complete when the part is warmed. The annoyance keeps him continually confined to the house even in the mildest winter weather. He is perfectly comfortable as long as he remains in a heated room. He had a similar attack lasting throughout February and March three years ago. There is a history of arthritis in the lower part of the back five years ago otherwise he has been perfectly well all his life. Examination reveals that he is apparently healthy. The tonsils are slightly enlarged and there is an advanced pyorrhea of all the teeth. Dermatographism is pronounced. His bleeding time is normal but the coagulation time is prolonged. A tooth recently pulled bled so much that a packing was necessary several hours later to stop the hemorrhage. The hemoglobin and the red and white blood cell counts are normal; the differential count is practically normal and the urine is negative for albumin and casts. The affected parts do not show noticeable change during or after an attack. He has had 15 grains (1 Gm.) of calcium lactate three times a day for two weeks without any improvement. Could you suggest a diagnosis and treatment? Please omit name.

M.D. Iowa

ANSWER—The condition described appears to have certain relations to frost-bite and like it must be due to disturbance in the circulation. When the skin is pale and moist it is intolerant of chilling. As the patient under discussion is not anemic he probably has a tendency to angiospasm, possibly on a vagotonic basis in which dermatographism is also frequently evident. If this view of the underlying disturbance is

correct, atropine sulphate in doses of from 0.5 to 1 mg., taken one, two or three times a day ought to afford relief. The giving of calcium is also advisable, as calcium deficiency may be the cause of the vagotonia as well as of the prolonged coagulation time. To secure noticeable effect from calcium salts, however, they must be given in much larger doses than have been administered to the patient. The simplest and probably the best way is to prescribe calcium lactate, say 100 Gm., in bulk, and have the patient take a teaspoonful, stirred into a glassful of water, three times daily after meals. The peripheral circulation, especially of the hands and feet, may be improved by alternating hot and cold immersions, five seconds each for ten or fifteen times morning and evening. One commences with water as hot as can be borne and finishes with cold water and vigorous friction. For this friction one may use for prophylactic as well as for symptomatic relief an antipruritic with hyperemic and anhydrotic tendencies, salicylic acid (1 to 2 per cent) in alcohol which deserves first consideration for this purpose, as it is odorless and colorless. Addition of thymol and phenol (1 per cent of either or each) increases the hyperemic and antipruritic effect. The use of the lotion should be followed by liberal application of talcum powder.

TREATMENT OF IMPOTENCE

To the Editor—A man aged 30 married with a premarital history of no excesses, no gonorrhea, no syphilis and good health otherwise whose weight, blood pressure, urine, prostate and genitals are all apparently normal is able to effect erection but loses on intromission; i.e., he has premature ejaculations. There is no fatigue syndrome, no marital sexual excess and nothing of a neurasthenic or psychasthenic syndrome. What can you advise? If you publish please omit name, initials and city.

M.D. Kentucky

ANSWER—In many of these cases, although the prostate feels normal to the touch, a urethroscopic examination reveals a congestion of the prostatic urethra, especially in the region of the verumontanum. If such is the case it is important to relieve this congestion before resorting to stimulating treatment. For this purpose the patient should receive a deep urethral instillation of weak silver nitrate solution with the Bangs sound syringe every five days. One may begin with a 1:3,000 solution and gradually increase until 1:500 is reached.

In case congestion is not found, stimulating treatment should be commenced at once. The sinusoidal faradic current of moderate rapidity and as strong as the patient can bear without any pain is suggested. One cable is connected with a rectal electrode and the other with a wet-sponge electrode applied to the perineum and the current allowed to pass for about ten minutes. The prognosis is excellent in these cases.

SYMPTOMS OF CEREBRAL SOFTENING

To the Editor—Will you please give your opinion in regard to the following: Six weeks ago a woman in fair health aged 73 fell in her room on arising in the morning speechless, one side of her face drawn (left), her right arm and leg paralyzed completely and never unconscious. Speech returned a little after a few days but she cannot talk well. Her arm and leg are completely paralyzed. Her mind is bright and active. Please suggest the treatment and the probable prognosis. Kindly omit name and address.

N.D. New York

ANSWER—This patient probably has a cerebral softening due to a thrombosis of the lenticulostriate artery of the left side. The initial symptoms are usually much more severe than what one may expect from the actual destruction of the tissue. Therefore it is probable that some power in the extremities will return. There is no particular treatment that can be given. The outlook in patients of this advanced age is not very good.

ETIOLOGY OF ERUPTION IN WORKER WITH OIL

To the Editor—A man aged 27 who works in Superkool oil put out by D. J. Stewart of Chicago has developed a papulovesicular rash over all his fingers. I understand that this oil has about 8 per cent of sulphur and paraffin in it and that it is considered a high grade of oil. Could this dermatitis be due to the sulphur which I believe it is? Please send me any information on this subject. Please omit name.

M.D. Illinois

ANSWER—Sulphur dermatitis is dry and scaly. The common form of oil dermatitis is papulopustular, an acne. A vesicular eruption on the hands is nearly always either a dermatitis venenata or a ringworm. If the latter, the organism may be found in the roof of a vesicle, but is not always discoverable. Frequently, ringworm is found in the macerated epithelium between the toes. If this is an oil dermatitis it should clear up when the patient lies off, and recur when he returns to work.

ANAPHYLACTIC URTICARIA

To the Editor—A man aged 22, with negative family and personal history in good physical condition was afflicted with hives between the ages of 5 and 7 and never experienced a similar reaction until last spring, when he was traveling in the eastern part of the United States. He awoke one morning to find an unsightly welt in the right supra-orbital region. The only thing he had eaten for supper the night before was a candy bar. Two weeks later a similar reaction occurred. The intervals between the appearance of the welts became less until now there is seldom a day that the patient is without one or a combination of the following welts above the eyes, occipital region, arms, forearms, lower extremities (including plantar surfaces), abdominal skin brief (especially the thoracolumbar region), cheeks, lips and hands. The welts begin with a feeling of flushing on the particular area followed by a plateau-like arrangement with indurated edges which persists until the lesion begins to be absorbed. Absorption takes place in from four to twenty-four hours. Cripules of epinephrine and subcutaneous injection of epinephrine seem to hasten the absorption. The patient has been on various diets with high restriction on various proteins and carbohydrates with no influence on the condition. There is hardly a food that does not bring on the eruptions which vary in size from a few centimeters in diameter to ones covering the entire small of the back. Lettuce and sweet milk are the only things that do not affect him. The eruptions on the cheek are submucous and can be seen as a bubble-like lump under the mucosa. Can you suggest any procedure for determining the exacting cause, the diagnosis, the treatment and the prognosis? The condition is embarrassing to him since he is in a business which brings him into contact with many people daily.

M D Minnesota

ANSWER—This case evidently one of severe urticaria would have to be studied thoroughly before a diagnosis as to the cause could be made. It represents one of the most difficult types for diagnosis. Dangerous attacks can be relieved by epinephrine if given to the point of causing slight tremor of the hands. Solution of epinephrine hydrochloride in 0.25 cc doses ought to be used and this can be repeated every five minutes until relief or tremor of the hands is produced. An epinephrine reaction such as a heart pound can be stopped by putting a rubber tourniquet on the arm above the site of inoculation.

The outlook depends on the cause of the trouble. A case of this sort may clear up or continue with remissions for a number of years.

CAISSON DISEASE WITH MYELITIS

To the Editor—Dec 22 1930 at 2 p m a sand hog was decompressed too rapidly while leaving a caisson. The pressure was 41 pounds. I was called at 2 30 to attend him as he was suffering the bends of the abdomen and lower extremities. He was immediately placed in a hospital bed and recompression and decompression were done according to the New York State standards. After this treatment he was given camphorated tincture of opium and massage to give the relief which the bed did not give. At 6 a m the patient was resting quietly in bed. At 8 a m he complained of inability to move the lower extremities but sensation was present. He was immediately replaced in the hospital bed, recompression was done to 42 pounds and for one hour massage of the lower extremities and back was administered. During this time the patient did not experience any relief. He was decompressed in one hour and placed in a hospital bed. He is unable to urinate and defecate. Sensation is present the knee jerks are hyperactive, ankle clonus is present and the Babinski reflex is positive. I desire information regarding treatment other than catheterization, enemas and guarding against bedsores. I will appreciate an early answer kindly omit name.

M D Texas

ANSWER—This promises to be a typical case of so called caisson myelitis which really is not a myelitis as it is not truly inflammatory. In this case the nitrogen bubbles that escaped from the small vessels in the cord during the rapid decompression had already done structural damage to the cord fabric before they returned to the blood during the recompression. Small areas of necrosis, perhaps with small hemorrhages, remain and will gradually be converted to fibrous tissue. In this case it appears that the pyramidal tracts have suffered the most. It is no use to do any more recompression or to apply aggressive form of treatment of any kind. The main thing is to take good care of the bladder and skin, which may mean keeping the patient on a water bed if the paralysis of the legs is complete. Small doses of iodide of potash will be in order.

PROGNOSIS IN PERNICIOUS ANEMIA—SPINAL ANESTHESIA

To the Editor—1 What is the probable duration of life in patients suffering with pernicious anemia apparently successfully treated by modern methods? What I want to find out is the potency of the treatment over a number of years for example. 2 What solution do you recommend for spinal anesthesia as on the whole most efficient and safe? Please omit name and address.

M D Massachusetts

ANSWER—1 The evidence is that patients suffering from pernicious anemia who are treated with an adequate amount of liver or a potent substitute remain indefinitely in a satisfactory state of health. The problem is not to treat the patients with

liver but to treat them with enough liver or a potent substitute. It must be recognized that such complications as infection damage to the cardiovascular system and severe injury to the liver are causes of death and, when they arise in pernicious anemia, often handicap the beneficial effect of modern treatment.

2 A solution of crystals of procaine hydrochloride dissolved in spinal fluid has been proved to be on the whole the most efficient and safest agent for spinal anesthesia. This agent usually produces anesthesia whereas other local anesthetic agents fail more than occasionally. On the other hand anesthesia may not last as long with procaine hydrochloride solution as with some other agents.

SUPRARENAL EXTRACT IN EXHAUSTIVE STATES

To the Editor—In discussing a paper on the Exhaustive States given at the annual session of the American Medical Association in 1929 Dr N S Davis stated that a suprarenal extract which is effective when given orally had recently been developed at the University of Chicago. Do you know whether this product is on the market and if so where it can be obtained? Please omit name.

M D New York

ANSWER—The preparation is still in the experimental stage and is not available on the market. It is a preparation of the suprarenal cortex that is epinephrine-free. When given in considerable amounts it is effective orally, but it has a much more uniform action when given hypodermically. This preparation in certain cases increases the mechanical efficiency, raises the basal metabolic rate, and increases the combustion of sugar.

TREATMENT OF MIGRAINE

To the Editor—A woman aged 52 menstruating until three years ago has paroxysmal left-sided headaches. The headaches began about fifteen years ago and seemed to appear about the menstrual periods lasting only fifteen or twenty minutes but occurring several times daily. They are of a throbbing type located in the temporal parietal regions and in the past few years have extended into the occipital and postoccipital regions. Position seems to have little or no effect during the paroxysms. During the past five years she has had the headaches every day lasting fifteen or twenty minutes and returning every three to four hours. There is no particular cardiovascular weakness, the blood pressure is 122 systolic and 72 diastolic. The urine and blood Wassermann examinations were negative. She has had no diseases since childhood when she had malaria. There seems to be no pallor of the face during an attack nor have I been able to distinguish any change in the fundus of the eyes. Yet there is some loss of vision of the left eye. The eyes have been examined by a competent ophthalmologist. I have given her extract of hyoseyamus, phenobarbital and amidopyrine which have given some relief. She sleeps much better without paroxysms at night but the first attack is about 6 o'clock every morning. If you have some suggestions on this case I would appreciate them.

J WENDALL MERCER M D Cherokee Okla

ANSWER—If there are no signs of cerebral arteriosclerosis, the type of headache described with such a long chronicity may well be considered as migrainous, but the cause of the loss of vision was not stated. It is well to keep check on the optic disks at regular intervals on a patient of this age who has almost continuous headaches. Fluid extract of cannabis in increasing drop doses sometimes is helpful in the treatment of migraine provided the drug is increased to just below the dose necessary to produce the first signs of intoxication.

SCARLET FEVER STREPTOCOCCUS

To the Editor—Has the micro-organism of scarlet fever been isolated? If so what is it? Is Dick's conclusion as to the cause of scarlet fever generally admitted by the profession? If so can throat swabs and cultures determine who is and who is not a scarlet fever germ carrier? Please omit name.

M D Massachusetts

ANSWER—It appears to be generally accepted that scarlet fever is caused by a form of streptococcus. George F Dick and Gladys H Dick have demonstrated definitively that scarlet fever is caused by a streptococcus which produces a specific toxin that susceptibility to scarlet fever can be determined by the presence or absence of reaction to this toxin when injected intradermally. That susceptible persons can be protected against scarlet fever by injections of this toxin and that a useful antiserum against scarlet fever can be obtained by immunizing horses with the toxin. On account of the difficulty of recognizing the scarlet fever streptococcus either by its form or by its growth on artificial cultures it is not practically possible at this time to determine by swabs and cultures whether a given person is a scarlet fever carrier. The scarlet fever streptococcus can be recognized by its power to produce a specific toxin and by certain immune reactions but these methods are rather too complicated to be applicable in practical work as the matter stands at present.

VASOMOTOR PHENOMENA WITH URTICARIA

To the Editor—I have recently seen a condition in a child of which I am unable to find mentioned in any of my textbooks. This little girl aged 5½ years white has recently passed through an attack of influenza. There was a bronchitis acute coryza and unilateral conjunctivitis with subconjunctival hemorrhage. She is at this time convalescing from these conditions and has no fever. Two days ago there began to appear in the infra orbital region in erythrodermia which was about the size of a fifty cent piece (30 mm in diameter) and which spread out fan shaped in the direction of the jaw. The redness was not attended by subjective symptoms and persisted for about five minutes when it suddenly disappeared. About half an hour later the same condition appeared on the opposite cheek and disappeared in a like manner. This would seem to be some vasomotor disturbance and I am interested from purely an academic standpoint to know whether there is any explanation of the condition. Please omit name.

M D Virginia

ANSWER—The vasomotor phenomenon described might have been caused by any of the forms of irritation that cause other vasomotor disturbances like urticaria. Did the child receive any serum injection during the illness or recently? If not drugs, intestinal toxins or reflexes from internal organs might be to blame. The depression following influenza may have lowered the threshold to irritation.

LACTICACID FLORA OF VAGINA

To the Editor—Recently I noticed in a slide and culture from a normal vagina the presence of a type of bacilli that have long been puzzling me. Although I have consulted at least a dozen good reference I have as yet been unable to discover just what it is. The bacilli are approximately 6 microns long by 1 micron wide. They have a tendency to form chains of two to four bacilli in culture. There was an abundant growth on both nutrient agar and telluric agar. (In your suggestion from the few facts anything they could be I undoubtedly think them to be saprophytes as the same pure inoculated intracritically with a pure culture five days ago do not show signs of illness. Two on motility were negative for pathologic appearances. The bacilli were recovered from both of them at the autopsy.)

D BERNETT LAUDER Oakland Calif

ANSWER—It is difficult to tell from the description exactly what the organism in question is for there are a large number of different types of bacilli in the vagina. One author lists sixteen main groups of vaginal bacilli some of which are divided into smaller classes. An extensive article on the morphology and technique of the vaginal flora was contributed by R. Schommon to J. Hilban and L. Seitz's *Biologie und Pathologie des Weibes*, Berlin Urban and Schwarzenberg, 3 1156 1924.

HEREDITARY AND CONGENITAL DISEASE

To the Editor—Will you please explain the difference between hereditary and congenital diseases. Can you classify syphilis as hereditary? My understanding was that hemophilia otosclerosis and insanity were the only true hereditary diseases. One of course may be born with syphilis but to call it hereditary is hard to understand. Why not congenital only if it exists at birth or is acquired later on in life? Syphilis is not transmitted as a constitutional quality from parent to child—you have or have not the disease. Why the three diseases mentioned are hereditary is easy to understand—why others are classed so is hard to understand.

M D Wisconsin

ANSWER—The terms hereditary and congenital are often used as synonymous in speaking of disease. This leads to confusion. Strictly speaking a disease of any sort is congenital if it is present at birth even if known to be due to prenatal infection or to unfavorable uterine environment. Only those diseases are hereditary which are due to a condition different from the normal in the actual make up of the hereditary substance in the germ cell egg or sperm.

In this sense syphilis is congenital but not hereditary. What is inherited in many diseases is relative susceptibility or immunity to a disease not the disease itself.

ACTION AND USES OF SODIUM GLYCEROPHOSPHATE

To the Editor—Will you please inform me as to the maximum amount of sodium glycerophosphate that might be taken in one dose and also the maximum amount that could be taken daily without any harmful effect. Is this drug a toxicant in any dosage and if so in what way is it manifest? I realize its practical value as a drug is nil. Please omit name.

M D Michigan

ANSWER—Sodium glycerophosphate has been used in doses up to 10 Gm (150 grains). Information on its toxicology seems to be lacking but there is no doubt that in large doses and concentrated solution it will act as an irritant poison by reason of its salt action. As our correspondent points out the glycerophosphate propaganda was based on false premises. The glycerophosphate radical has no therapeutic advantage over the ordinary and more economical phosphate.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

AMERICAN BOARD FOR OPHTHALMIC EXAMINATIONS Philadelphia June 8 1931
DENVER July 23 1931 Sec Dr William H Wilder 122 S Michigan Ave Chicago Ill
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COLORADO Denver April 7 1931 Dr W W Williams 224 State Capitol Bldg Denver Colo
IDAHO Boise April 7 1931 Comm Mr Emmitt Post 105 Idaho Falls Idaho
ILLINOIS Chicago April 7 9 1931 Supt Mr P I Johnson Springfield Ill
MINNESOTA Minneapolis Regular April 21 23 1931 Sec Dr E J Imberger 524 Lowry Bldg St Paul Minn Basic Science April 18 1931 Sec Dr F T Bell 110 Anatomy Bldg University of Minnesota Minneapolis Minn
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NEVADA Carson City May 4 6 1931 Sec Dr Edward E Harter Carson City Nev
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TENNESSEE Memphis March 30 31 1931 Sec Dr A B DeLoach Medical Arts Bldg Memphis Tenn
WISCONSIN Milwaukee April 14 1931 Reciprocity Applications Sec Dr K L Flynn 315 State Bank Bldg La Crosse Wis

CLINICAL CASE STUDIES AS INSTRUMENTS IN THE TEACHING OF PUBLIC HEALTH

H A HISCOCK, CH

Associate Professor of Public Health Yale University School of Medicine
NEW HAVEN CONN

Increasing recognition of prevention as the keynote in the practice of modern medicine has stimulated interest in the nature of public health instruction in medical schools. Important advances in this field of education have been made in recent years, but there is considerable variation in different institutions in the scope of courses and in the methods of instruction. In the training of medical students at Yale public health is considered as a fundamental point of view that should permeate the daily activities of the individual practitioner and make him an active factor in the community health program.

The department of public health at Yale is constituted as one of the basic divisions of the school of medicine. The teaching of public health is correlated through a committee on preventive medicine, with instruction given in the first three years by other departments of the medical school which have representatives on this standing committee. The attitude of the medical students has changed over a period of years, as a result of a new attitude on the part of the whole faculty of the school. It is fair to say that every department from pathology to pediatrics is teaching preventive medicine.

The department of public health gives a course in principles of public health in the first half of the second clinical year that summarizes the main problems involved. This course consists of lectures discussions in small groups and field work. The course includes facts about water supply, waste disposal and ventilation that the average physician should know but its chief aim is to review all the student has learned in the three years of his relations to the community and to show him the part that he as a physician must be prepared to play in campaigns concerning child hygiene, tuberculosis venereal disease and mental hygiene.

Practical field work and demonstrations to illustrate the underlying principles of public health are essential features of the instruction of medical students. Until two years ago field work at Yale as in many other medical schools included a health survey of a city or town. The value of sanitary surveys depends largely on the care given to the collection and analysis of data. If properly supervised and supported they may benefit

communities and students alike, but if performed in a haphazard or perfunctory manner, they are both time consuming, and worthless from an educational standpoint

ORIGIN AND PURPOSE OF CASE STUDIES

The medical student enters the wards in his first clinical year and is beginning his dispensary work in his second clinical year. He finds this work more fascinating than making a health survey of the usual type, which he is inclined to regard as outside his realm and so much time taken from what he is likely at this period to consider his real medical activities. The clinical case study plan herein described was devised to take the place of the conventional health survey previously required. Through this means, the student approaches the community health program from the inside, through a personal medical contact with the individual case, working out from this concrete experience rather than from the outside abstract approach through governmental and voluntary organizations. Attention is therefore primarily devoted to the importance of considering the relationships of a medical case to the home, the family and the community. Particular emphasis is given to the public health and social machinery that is available or that ought to be available for the prevention and alleviation of disease.

For two years, clinical departments in the medical school have cooperated with public health in the organization of a series of studies, by students in the second clinical year, of selected cases from the dispensary and hospital services. The purpose of these studies is to give the medical student a clearer conception of the varied factors underlying the immediate acute condition of illness or incapacity, seen in the dispensary or hospital, and especially to provide opportunity to consider the causes operative in a case and the methods by which the illness might have been prevented. Such a plan includes a study of community resources for handling various types of problems, medical, nursing, clinical, social service and the like, all parts of the broad problem of public health.

SELECTION OF CASES

The following types of cases were selected

Amebic dysentery
Gonorrhea
Meningococcus meningitis
Pneumonia
Rheumatic fever
Scarlet fever
Syphilis, including congenital
Tuberculosis, adult and childhood
Whooping cough
Industrial accidents and diseases
Heart disease, adult and childhood
Orthopedic cases
Special surgical cases
Prenatal and obstetric cases
Mental hygiene cases

The student was first given an opportunity to express his preference as to the type of case he would follow. Some had seen patients in the dispensary or hospital in which they had become interested. The cases so suggested were discussed with the physician in charge of the clinic to be sure that this type of study on a given case was practical. Ultimately each student was assigned one case for follow up.

PROCEDURE

After the cases were assigned the students conferred with the physician in charge of the clinic concerned and went over the case record in the dispensary or hospital noting at that time what service the patient had received and what other community agencies were involved.

To gain a first hand impression of home and family conditions from one to five home visits were made on each family. The families in most cases were responsive and gave the students

more information regarding family histories and problems than had heretofore been noted. Information was obtained regarding living and working conditions, the size of the income in relation to the size of the family, histories of previous illnesses in the family, and agencies known by the family as having rendered service.

After the home visit, students interviewed heads of the nursing, mental hygiene or social service agencies carrying the cases to obtain their points of view. When the visiting nurse association was concerned the nurse of the district in charge of the patient was interviewed. The organization and work of the most important agencies were studied. The student considered the problem of prevention, what legislation existed or should have existed that could minimize the likelihood of the disease or accident in question and what steps the board of health, the employer, the dispensary, the visiting nurse association or the mental hygiene society had taken or might have taken to prevent it. In other words he was asked to work from the condition of the individual disease back to its underlying causes and out to the entire community machinery for prevention and treatment as applied to the disease in question.

A detailed report of the case was finally prepared for presentation in class conference. As a guide in the preliminary study of the problem each student was given the following outline of factors to be considered, but emphasis was placed on the importance of using initiative in working up the case.

FACTORS TO CONSIDER IN THE FOLLOW UP OF CLINICAL CASES

I The patient

- (a) Description of individual and of case
- (b) Immediate cause of dispensary visit
- (c) Underlying causes discovered either in the dispensary or on home visit which have an important bearing on the production of the medical or surgical complaint
- (d) Other related factors in present or past social history
- (e) Response to advice and treatment in dispensary or hospital. If response is not good, why? What are the underlying causes?
- (f) Has medical advice been sought previously outside the clinic? From physician? Other? Use of patent medicines?

II The family

- (a) Description and social history. Social tendencies of mother and father
- (b) Special health, medical or social problems
- (c) Contacts with dispensary or hospitals
- (d) Factors related to case study—financial status, etc.

III The home and surroundings

- (a) Description, general appearance, light, heat, yard, mill supply, food supply, surroundings
- (b) Reasons for present home circumstances

IV The community

- (a) Social or health agencies concerned over period of years
- (b) Services rendered—adequacy
- (c) Attitude of family toward agencies
- (d) Possibilities of other services needed
- (e) Has the community handled the problem properly? Are there any suggestions for a more scientific treatment of this case from a medical or social point of view?

V Summary

- (a) How could the medical, mental or surgical condition have been prevented?
- (b) How can conditions be improved?
- (c) Specific recommendations regarding this case
- (d) Specific recommendations regarding this type of follow up study in the future

VI List of persons and agencies interviewed regarding the case

PRESENTATION OF REPORTS

The series of reports was arranged so that similar problems were presented at the same period. Ten fifty minute period,

previously used for group conferences and field trips were set aside for this purpose. The city health officer, the director of the visiting nurse association and the director of the dispensary were invited to attend all the sessions. When tuberculosis cases were reported the head of the tuberculosis clinic and hospital service, the director of the city tuberculosis bureau and representatives of community social agencies were also present. In the same manner representatives of clinics and of nursing and social agencies were invited to be present at the sessions when cases in their fields were presented in order to participate in the discussion, to supplement the reports, to answer questions and to consider the problems from the standpoint of what might have been done as well as what might be the developments of the future. The members of the class participated actively in the discussion. The executive secretary of the community chest was helpful on special occasions as a social service consultant since he is thoroughly acquainted with local and state conditions and with the broad problem of social service.

In the future it is planned to clear each case at the outset through the social service exchange and during the three months in the fall and winter when the cases are being followed to receive reports of new contacts with each family is additional aids to the students. This procedure is considered desirable in spite of the fact that the dispensary records show the agencies at work on the case at the time the study is undertaken.

Among the questions usually asked after a case was reported were the following: How could this condition have been prevented? After the condition developed, were the proper steps taken for its detection and amelioration? What can be done about the situation at present? How far are the community resources adequate to meet situations of this kind?

Many of the cases raised legal, social, mental, medical, nursing and public health questions. The students studied their cases intelligently and industriously and their reports were carefully prepared. In fact some of the reports have formed the bases of clinical lectures and may be used for community case conferences by social agencies.

VALUE OF CASE STUDIES

The students become impressed with the fact that frequently the condition of a patient who comes for medical advice or treatment is only an end result of some earlier symptom or condition. In many cases the condition that prompted a patient to come to the clinic is not nearly as serious as some other problem of the patient or his family that may be disclosed subsequently. Often the problem calls for more than medical treatment, nursing care or social service, requiring a combination of all. A new type of technique is necessary which reaches even beyond medical social service.

In the children's tuberculosis clinic of the dispensary there are found children with tuberculosis from outlying towns in which a milk supply is suspected. The local health officer must be approached, the dairy inspected, the herd tuberculin tested. Or in a family in which there is an adult with tuberculosis, contacts may be found who have not been examined and in whom additional stimulus is necessary to bring about the necessary visits to the clinic. In visiting a medical case one may find several children who show marked signs of rickets or malnutrition or some other defect and the parents are urged to bring the children to the clinic. The student may arrange to meet the family at the time of the next visit to the clinic and thereby establish closer working relationships and better understanding.

Certain diseases or disabilities may suggest association with abnormal living or working conditions that need an investigation into housing problems or industrial hazards. Others lead directly back to epidemiologic factors that might have been controlled by more adequate community machinery or closer working relationships. In the field of mental hygiene problems of the courts and of various social agencies in dealing with

emotional and psychologic factors are revealed. Other studies bring one face to face with economic and social problems, and with problems of eugenics that need careful consideration.

These studies have proved of direct value to the clinics, to the students and to the patients. Fundamental prevention was emphasized and vital contact was made between the patient in the dispensary or hospital and the preventive and ameliorative machinery of the community. At the conclusion of an annual series of case reports the students have become familiar with the community health and welfare resources and with problems of human relations. Through the breadth of view and the vital human sympathies aroused, it is believed that the students will approach patients in their private practice more constructively and humanely and that they will participate far more effectively and sympathetically in the public health programs of the community as a result of this experience.

310 Cedar Street

Minnesota October Examination

Dr E. J. Engberg, secretary of the Board of Medical Examiners of Minnesota, reports the oral, written and practical examination held at Minneapolis, Oct. 21-23, 1930. The examination covered 11 subjects and included 60 questions. An average of 75 per cent was required to pass. Forty-seven candidates were examined and passed. The following colleges were represented:

College	PASSED	Year Grad	Per Cent
Iowa University School of Medicine	(1930)	94.5	
Northwestern University Medical School	(1930)	90.4	92.1
Rush Medical College	(1930)		88.3
University of Illinois College of Medicine	(1930)		90.4
Indiana University School of Medicine	(1927)		89.6
State University of Iowa College of Medicine	(1928)		91.5
University of Louisville School of Medicine	(1929)		89.1
University of Maryland School of Medicine	(1929)		92.1
Harvard University Medical School	(1929)		97
University of Michigan Medical School	(1928)		91.3
University of Minnesota Medical School	(1928)		89.2
(1930)	82.6 * 84.5 * 86.6 * 86.5 * 86.5 * 87.2 * 87.3 * 87.5 * 88.2 * 88.3 * 88.6 * 89.5 * 89.5 * 90.0 * 90.3 * 90.3 * 90.4 * 90.6 * 93.5		
Washington University School of Medicine	(1929)		96.7
Columbia University College of Phys. and Surg.	(1928)		90.7
University of Cincinnati College of Medicine	(1929)		86
Western Reserve University School of Medicine	(1929)		90.5
University of Oregon Medical School	(1929)		93.3
Jefferson Medical College	(1929)		97.3
University of Pennsylvania School of Med.	(1928)	87.6	(1929) 89.1
University of Virginia Department of Medicine	(1928)		91

Dr Engberg also reports 6 physicians licensed through reciprocity with other states and 5 by the endorsement of credentials at the same meeting. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Stanford University School of Medicine	(1930)		California
Rush Medical College	(1928)		Illinois
University of Louisville School of Medicine	(1929)		Kentucky
St. Louis University School of Medicine	(1928)		Michigan
Creighton University School of Medicine	(1929)		Nebraska
University of Wisconsin Medical School	(1928)		Wisconsin

College	ENDORSEMENT OF CREDENTIALS	Year Grad	Endorsement of
Northwestern University Medical School	(1930)	28	N. B. M. Ex.
University of Michigan Medical School	(1928)		N. B. M. Ex.
University of Minnesota Medical School	(1929)		N. B. M. Ex.
Columbia University College of Phys. and Surg.	(1926)		N. B. M. Ex.

* These applicants have received their M.B. degrees and will receive their M.D. degrees on completion of one year's internship in a hospital.

Kansas December Examination

Dr C. H. Ewing, secretary of the Kansas State Board of Medical Registration and Examination, reports the written examination held at Topeka, Dec. 9-10, 1930. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Thirteen candidates were examined and passed. The following colleges were represented:

College	PASSED	Year Grad	Per Cent
Howard University School of Medicine	(1930)	86.8	87.1
Rush Medical College	(1928)	93.0	93.1
University of Kansas School of Medicine	(1930)	81.4	91.7
Kansas City Hahnemann Medical College	(1912)		83.8
Creighton University School of Medicine	(1930)	90.2	90.3
University of Oklahoma School of Medicine	(1930)		91.6
			92.4

Dr Fung also reports 18 physicians licensed through reciprocity with other states at the same meeting. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
University of Colorado School of Medicine	(1929)	Colorado	
American Medical Missionary College	(1905)	Nebraska	
Rush Medical College	(1924)	California	
State University of Iowa College of Medicine	(1926)	Iowa	
University of Louisville School of Medicine	(1925)	Kentucky	
Tulane University of Louisiana School of Medicine	(1916)	Mississippi	
(1914) Louisiana			
University Medical College of Kansas City	(1895)	(1913)	Missouri
Washington University School of Medicine	(1926)	(1929)	Missouri
University of Nebraska College of Medicine	(1921)	(1921)	Nebraska
Peletic Medical College Cincinnati	(1927)	(1927)	Georgia
Jefferson Med Coll of Philadelphia	(1912)	(1927)	Pennsylvania

Book Notices

THE PATHOLOGY OF INTERNAL DISEASES. By William Boyd M.D. MRCI FRSC, Professor of Pathology in the University of Manitoba. Cloth Price \$10. 1 p. 888 with 296 illustrations. Philadelphia Lea & Febiger 1931.

This is a companion piece to the author's Surgical Pathology. The two volumes look alike, although published by different firms. A few borderline diseases are described in both volumes, an overlapping that is probably unavoidable and perhaps desirable. Many of the illustrations in Surgical Pathology are also in this new work. The author states that he has not confined himself to the strict limits of morbid anatomy but has allowed himself to wander rather freely in the realms of pathologic physiology. This attempt to correlate symptoms with lesions is the most distinctive feature of the treatise and receives due emphasis in the charming foreword by Barker accompanying the preface. It is altogether natural to find this later work written in a more agreeable style than the earlier one. There is something of lure and camaraderie in the way the reader is led on by such expressions as 'we have just seen,' 'when we consider,' and 'these facts justify us.' On the other hand, it is seen that, "it appears," it becomes evident' and numerous other similar beginnings are tedious. In one case on which I performed an autopsy' (p. 698) and the 'case which was typed 301 times' (p. 339) are disturbing, to say the least. The beaten path is left for a frolic now and then when we accompany him steering a careful course between the Scylla of an unwarranted particularization and the Charybdis of a speculative nihilism' (p. 795). The Scylla and Charybdis of lymphoid tissues are also dangers for the tubercle bacillus (p. 197). Should it succeed in passing these, 'it sets out upon an Odyssey which may carry it far and wide throughout the body'.

On the whole, Professor Boyd's assurance has endowed his phraseology with literary power and some brilliance. His descriptions of disease impart a feeling of security and confidence in the information set forth. He says, for example, in discussing tabes dorsalis, 'my information is not first hand' and in another place, 'it would be possible to write at great length on the subject of eclampsia but nothing would be gained thereby.' Many will endorse his opinion that the term 'nephrosis' is responsible for much confusion and loose thinking' and this will apply equally well to the recently proposed 'myocardosis' if its use becomes general. The familiar 'fibrosis' lacks precise significance and it is safe to assume that few will be able to anticipate from the heading 'Hydrohepatosis' on page 336 the content of the paragraph that follows. It is refreshing to find, introducing the discussion of the reticulo-endothelial system, that it is invoked to explain all kinds of emigmas and has been considerably overworked in this respect. Frequently one encounters sentences fairly gorgeous with significance. In discussing certain cells in the spleen they are 'entrapped in the pathless forest of the pulp' Agnir (p. 442). There is no more perplexing subject in pathology none more baffling and tantalizing than the relationship between arterial and renal disease.

The plan is that which is generally followed in textbooks on special pathology or the morbid anatomy of the viscera starting with the heart and blood vessels and ending with the central nervous system. The first chapter is twice as long as any of the others except that on the lungs. Diseases of the skin, joints, genital and lower urinary organs, apparently all without the

scope of internal diseases are omitted, those of the bone marrow have a short chapter. The rather even level of excellence makes it difficult to choose portions for especial commendation. However among other subjects diseases of the blood and of the thyroid gland and pulmonary tuberculosis are discussed in an admirable and forceful manner, and with thoughtful attention to recent developments. The pages (427-437) devoted to the relation of symptoms of Bright's disease to its morbid anatomy may be recommended as a sample should one be desired, to bring about prolonged examination of the entire volume. Throughout the book there is evidence of wide acquaintance with medical history and important contributions to knowledge of disease. Requisite compactness has been attained by limiting the text to essentials and wise selection of references for the short bibliographies at the end of the chapters. The author is to be congratulated on his success in linking up the pathology so commonly segregated to instructors and student days with the routine practice of medicine.

ANALYTICAL REVIEW OF REPORTS FROM PASTEUR INSTITUTES ON THE RESULTS OF ANTI-RABIES TREATMENT. By Lt Col A. G. McKendrick F.R.S. Director of the Laboratory of the Royal College of Physicians. Edinburgh. Health Organization League of Nations III. Health 1930 III 2 C II 844. Paper. Pp. 158. Geneva. League of Nations 1930.

The International Rabies Conference, which was convened by the Health Organization of the League of Nations in 1927 adopted the resolution asking antirabies institutes of all countries to submit the results of antirabies treatment on a uniform plan. Statistics of 31,636 persons treated at 31 antirabies institutes have been analyzed. They are subdivided into two groups the European and the non European with the results that the non European group appears to be at a higher state of risk than the European and that there is no indication in favor of any one of the many methods of treatment used. Particularly there is no indication favoring the use of live rather than killed vaccines. The variation in the death rates among the various European institutes is not greater than would be expected as the result of chance variation. The same is true of the non European group. A comparison of the death rates for the two groups however, shows that the incidence of death due to rabies is higher in the non European group. The data are based on a small proportion of all the institutes of the world. It is expected that more definite conclusions can be reached as the scope of this analysis increases.

PHARMACEUTICAL MATHEMATICS. By Edward Spence Ph.C. B.S. Professor of Pharmacy and Dean of the School of Pharmacy, Western Reserve University. Cloth Price \$1.75. Pp. 126. New York. McGraw Hill Book Company Inc. 1930.

This little book covers the ordinary problems dealt with in pharmacy. Even physicians who may be rusty on matters of specific gravity, on percentage solutions and on the uses of tables will find items of help. The book is not in any sense profound in fact the term mathematics is almost too dignified. It is essentially an application of ordinary arithmetic to pharmaceutical problems.

THÉRAPEUTIQUE MÉDICALE. II. ALIMENTS MÉDICAMENTEUX. Par MM. M. Loeper, Marcel Labbe et al. 149 p. Price 45 francs. 1 p. 328 with illustrations. Paris. Masson & Cie 1930.

This French book on the medicinal uses of foods deserves more than passing notice as it contains quite an array of ideas and data not generally found in the literature in this country. Thus, Loeper in an introductory chapter proposes the term vitines for what we call vitamins because he believes that our present knowledge of these bodies requires their subdivision into two classes the fat soluble bodies, which should be called vitasterines embracing A, D and E and the water soluble or true vitamins B, C the antipellagrous body and at least two 'cellular nutrition' bodies. Richet in a chapter on zomotherapy (from the Greek *zomos* bouillon) relates his observations on the therapeutic value of raw meat juice on tuberculous dogs and human beings. He has elaborated a powder obtained by drying meat juice at a low temperature which produced in his hand remarkable effects in early cases of human tuberculosis when taken in sufficient quantity. Doses of from 80 to 120 Gm a day are generally well borne excepting in cases of peritoneal and intestinal tuberculosis in which diarrhea is liable to interfere. He proposes the unfortunate name *zomine* for this powder,

objectionable because the ending me should be reserved for pure active principles. Maurice Renaud deprecates the prescribing of milk *en bloc*. One should vary the composition according to the requirements of the patient and not give the same milk preparation to a baby, a senile person, a dyspeptic and a urticant patient. He brings out particularly well the climatic value of whey. The chapters on the nutritive and therapeutic value of wine, by M. Loeper and J. Alquier, and of beer, by Rioul Lecoq, will cheer the heart of the professional wet. It is necessary to pass, for lack of space, masterly lectures on vegetable 'cures' by Henri Labbe and on fruit 'cures' by Henri Jecle, but especial attention should be given to the chapter on the therapeutics of sugar, by Noel Fiesinger, who advocates sugar as a medicament in hyperchlorhydria and gastric ulcer on the basis of the fact that it depresses gastric secretion. He also maintains that in certain persons highly sugared foods are retained and digested when in others this would be impossible and that for this reason sugar is an important remedy in the treatment of vomiting. He quotes Looper and Marshall as ascribing an antianaphylactic effect to sugar on the basis of the observation in a number of cases in which fish bouillon produced an eruption that could be prevented by the addition of sugar or in which sugared egg was tolerated by a person anaphylactically intolerant of egg. They ascribe this effect to the leukocytosis produced by sugar. A sedative action on the opening of the ampulla of Vater is also claimed for sugar so that egg with sugar may not produce the biliary colic that would be caused by egg without it. He admits, however, that there are dyspeptic patients who cannot take sugar without a hyperacidity reaction, which he considers due to an abnormal sensitivity of the gastric mucosa. The necessity for the availability of sugar in immunity reactions leads him to the statement that in infectious diseases and intoxication the hydrocarbons form the basis of the therapeutic edifice. Good chapters on sea salt, cod liver oil and irradiated foods close this inspiring book.

THE TREATMENT OF HUMAN TRYPA NOSOMIASIS WITH TRYPARSAMIDE. A CRITICAL REVIEW. By Louise Pearce, M.D. Monographs of the Rockefeller Institute for Medical Research No. 2. Paper. Price \$2. 1p. 339. New York: Rockefeller Institute for Medical Research, 1930.

Here is a thorough digest of the treatment of human trypanosomiasis with tryparsamide. The author was closely identified with this work long before the introduction of tryparsamide to the medical profession. The work with this preparation has been done in a highly scientific manner. This monograph attests to the care with which Dr. Pearce has pursued her studies. Eight years has elapsed since the tryparsamide treatment of African sleeping sickness was instituted in the Belgian Congo. As the author points out, in the intervening years the use of the drug has constantly increased throughout tropical Africa where trypanosomiasis occurs, and considerable literature has accumulated on the subject. The monograph includes a review of the available records of cases that bear on tryparsamide therapy, the total number of cases considered being 1,848. From her critical analysis of the data Dr. Pearce concludes that tryparsamide is an efficacious drug for the treatment of trypanosomiasis caused by *Trypanosoma gambiense* and that it is to be recommended for general use under the conditions of both lazaret and field administration. For those interested in the treatment of human trypanosomiasis, the monograph will be found not only of interest but of real service.

PIELOGRAFIA ASCENDENTE E PIELOGRAFIA DISCENDENTE CON SPECIALE RIGUARDO ALLA NEFROPILOURETTEROPILOGRAFIA PER VIA ENDOVENOSA. Di Prof. Carlo Ravasini. Primario del Reparto Urologico (C. Nicolich) dell'Ospedale Regina Elena di Trieste. Paper. Price 45 lire. Pp. 282 with 76 illustrations. Bologna: L. Cappelli, 1931.

The work is divided into two parts, the first considering the subject in general and the second presenting numerous illustrations of intravenous pyelography in almost all disturbances of the kidney, including such rare lesions as echinococcus cyst. The initial portion of the monograph outlines the principles, technique and limitations of ascending pyelography based on 200 selected cases. It then describes the history of the development of descending pyelography, the early use of iodized urea and the peroral method of Ziegler and Kohler. Iopax is minutely described as to its history, chemical and physical properties, toxicity, antiseptic action, technique of administration, indications and contraindications and tolerance. A chapter describes the

methods of using intravenous pyelography by Iopax for the evaluation of renal function. Finally ascending and descending pyelography are compared, the advantages and indications for the two methods being thoroughly considered. Ravasini is enthusiastic over the results obtained by the intravenous method.

UNTERSUCHUNG DER URINARIE HARSTEINE. Von S. Okawa. Monographiae Actarum Dermatologicarum C. Series Urologica No. 2. Paper. Pp. 52. Kyo-o Institut Dermatologisch Universitatis Imperialis, 1929.

The author examined 177 urinary calculi which were obtained from 94 patients. The stones were examined chemically with especial reference to the quantitative values of the various urinary salts. Many stones were analyzed after division into central middle and outer layers, others were cut into sections from 0.2 to 0.02 mm in thickness and studied microscopically. Various types present different important characteristics, particularly in regard to their surface, the size of the component crystals and other interesting features of chemical interest.

THE ELECTROCARDIOGRAM. By W. H. Crumb. Medical Research Council Special Report Series No. 147. Paper. Price 1s. 3d. Pp. 57 with 11 illustrations. London: His Majesty's Stationery Office, 1930.

This monograph is a valuable contribution especially helpful to those who wish to understand the principles underlying the production and interpretation of the electrocardiogram. It may not interest the average practitioner as it is highly technical, dealing with many questions of physics especially with electricity as they concern the physiology of the heart. It is a most creditable piece of investigation and is admirably presented.

CRITICAL STUDIES IN THE LEGAL CHEMISTRY OF FOODS FOR CHEMISTS, FOOD INSPECTION OFFICIALS AND MANUFACTURERS AND DEALERS IN FOOD PRODUCTS. By K. O. Brooks, B.Sc. Consulting Food Inspector. Chemist. Cloth. Price \$6. 1p. 280. New York: Chemical Catalog Company, Inc., 1927.

This is largely a compilation of information on the legal aspects of the chemistry of some of the important classes of foods. The articles have been previously published by the author in various technical and trade journals. The book is written in simple language understandable to the intelligent layman. The significance of compiled chemical facts and data for foods with respect to food laws, regulations and standards is considered. Analytic data little known to the average chemist and layman are drawn from various chemical journals, federal state and Canadian food inspection reports, and reports of the U. S. Bureau of Chemistry and the Connecticut State Experiment Station. Chapters are devoted to the legal chemistry of fruits and fruit products, vinegars, interpretation of a vinegar analysis, legal chemistry of some condimental sauces, edible oils, cacao products, spices and maple products. The appendix furnishes some miscellaneous information on standards and definitions for fruit and fruit products, how carbonated fruit beverages are made, investigation of methods of preparing carbonated beverages from fruits, requirements of pectin for the commercial jelly makers, the importance of sugar in determining texture, flavor and yield of jelly, research on the manufacture of mayonnaise, report on a cooperative research on mayonnaise and the labeling of beverages and beverage materials under the federal Food and Drugs Act. The book is especially serviceable as an aid to the detection of adulteration of the foods discussed, for the interpretation of analyses in problems dealing with food laws, and for correlation of chemical composition, food inspection decisions and food standards. Much valuable information and data are made readily available in the discussions and tables. The meaning of the various chemical determinations used in food analysis is well considered. The book should serve as an excellent guide and aid in the ordinary problems involving commercial foods, their chemical composition and their legal status under the food laws.

DIE FILTRIERTAREN KRANKHEITSERREGER UND NEUES ZUM TUBERKULOSEPROBLEM. GEDAENKEN ZUR VERERBUNGSWISSENSCHAFT AUF GRUND VON STUDIEN AN DER LAHMKRANKHEIT (RHEUMATISMUS) DER HAUSTIERE IN IERT. Von Dr. Med. Vet. Fritz Mrowka. Veterinär Institut der Hacienda Casa Grande in Peru. Paper. Price 15 maris. Pp. 208 with 114 illustrations. Leipzig: Johann Ambrosius Barth, 1931.

This is an interesting but highly speculative thesis tracing certain diseases including several produced by filtrable viruses to lipoprotein intoxication and autonomous development of the specific causative micro organisms from fat droplets.

Medicolegal

Liability of Third Person for Medical Fees

(*Swarens v Pfinsel (Mo) 26 S W (2d) 951*)

Pfinsel was burned in a gasoline explosion in the course of his employment. His cousin, Mrs. Amel, with whom he boarded, requested Dr. Swarens to render medical services and promised to pay his bill. Pfinsel was unconscious when Swarens first visited him and at no time said anything to Swarens about employing him. Swarens, however, did not charge Mrs. Amel on his books for his services; he made the charge to Pfinsel. He rendered no bill to Mrs. Amel, but when his services ended, he, at Mrs. Amel's request, delivered his bill, made out against Pfinsel, to Pfinsel's attorney, who was negotiating for a settlement with the insurance company by which Pfinsel's employer was insured. Swarens' bill was not paid, so he sued Pfinsel and Mrs. Amel jointly. Judgment was rendered against both of them, but Mrs. Amel appealed, ultimately carrying the case to the Supreme Court of Missouri, Division No. 2.

Mrs. Amel contended that her promise to pay Swarens for his services was void, because it was not in writing, since the statute of frauds provides that "no action shall be brought to charge any person upon any special promise to answer for the debt, default or miscarriage of another person" unless the agreement is in writing. Her contention said the Supreme Court, was well taken, citing *Price v Chicago, M & St P Rd Co*, 40 Mo App 189, to show that if the beneficiary under a promise is liable at all, the promisor not being solely liable, the promise comes within the statute. Ordinarily, said the court, the question as to whom credit was given is one for the jury. The fact that Swarens' charges on his books were against Pfinsel alone, and not against Mrs. Amel, might not be controlling as a matter of law. The fact, however, that he sued both Pfinsel and Mrs. Amel, alleging that he had rendered services at the instance and request of both of them and prayed judgment against both shows beyond any question that credit was given to some extent at least to Pfinsel. In view of his conduct Swarens cannot say that credit was extended Mrs. Amel alone. The fact that Swarens presented a bill made out to Pfinsel to Pfinsel's attorney tended further to prove that credit was extended in part at least to Pfinsel. The court held, therefore, that the promise made by Mrs. Amel came within the statute of frauds and was void because it was not in writing. The judgment of the court below, against Mrs. Amel was reversed.

Compensation for Traumatic Neuroses

(*Welchlin v Fairmont Railway Motors (Minn) 250 N W 897*)

Welchlin was hit on the inner side of his right leg, near the groin by the handle on the carriage of a lathe at which he was working. A persistent limp followed. Welchlin instituted proceedings to obtain compensation under the workmen's compensation act. At the time of the final hearing before the industrial commission, about five months after the accident, he had a straddling movement of the leg, which gave him a straddling gait. He was doing bookkeeping apparently trying to learn, and getting nothing for it, although there was other work he might do.

Three physicians called by Welchlin testified that he was unable to work at his former employment, although his disability was not total. Two physicians called by the employer testified that he had suffered no serious injury, that he had recovered, that he could return to work if he would, and that his limp could be accounted for on the theory of a traumatic neurosis and was not disabling. There was no claim that Welchlin was actually or consciously malingering. One of the physicians who testified for the employer was of the opinion that a settlement of the case would not cause a disappearance of the limping but that if the case was settled and Welchlin got back to work at his machine he would forget his limp and a normal gait would be reestablished. The other medical witness called by the employer was of the opinion that the limp

was due either to habit or to a traumatic neurosis. The commission awarded Welchlin compensation for temporary total disability up to the time of the hearing. It found, however, that at that time there was no disability whatever. Welchlin thereupon appealed to the Supreme Court of Minnesota.

Under the Minnesota workmen's compensation act, said the Supreme Court, the injured workman does not recover damages for an injury; he receives a stated compensation, fixed by the statute as compensation for disability. He may have compensation for a neurosis if it is the proximate result of his injury and causes disability. A helpful statement of the situation in such cases as this appears in *Lares v Blainchdah Colliery Co* (1909) 2 K B 73 where the English court, in reversing the decision of a lower tribunal denying compensation, said:

The learned judge says he thinks that although the man honestly believes he is not able to do the work and although he is not shamming or malingering it is sufficient for the employers to show that the muscular mischief is at an end. I am entirely unable to assent to that view. The effects of an accident are at least twofold: they may be merely muscular effects—they almost always must include muscular effects—and there may also be and very frequently are effects which you may call mental or nervous or hysterical whichever is the proper word to use in respect of them. The effects of this second class as a rule arise directly from the accident from which the man suffered just as much as the muscular effects do, and it seems to me entirely a fallacy to say that a man's right to compensation ceases when the muscular mischief is ended though the nervous or hysterical effects still remain.

The evidence in the present case, said the Supreme Court, does not indicate that the partial disability will last long. It may take some effort on the part of the workman to put him self into normal condition and there may be attendant pain. But said the Supreme Court we are unable to see how it can be found that no disability remains. There is a limited partial disability; the finding of the commission is not sustained. The order of the industrial commission was therefore reversed.

Evidence from Unauthorized Autopsy

(*Streipe v Hubbuch Bros & Ellendorf (Ky) 25 S W (2d) 558*)

Streipe in the course of his employment fell from a ladder some eighteen or twenty feet high and died in a few minutes. He had always enjoyed the best of health and appeared in good health when he left home on the day of his death. Without the consent of his widow, an autopsy was performed. His widow applied to the workmen's compensation board for compensation. The physician who performed the autopsy and two physicians who attended at the instance of the insurance carrier testified that Streipe was suffering from myocarditis which in their opinion caused his death, and the workmen's compensation board refused to give compensation. The order of the board was affirmed by the circuit court, and an appeal was taken to the Court of Appeals of Kentucky.

The only point at issue was the admissibility of the evidence of the physicians, based on the unauthorized autopsy. Without that evidence the finding of the workmen's compensation board was without support. On behalf of the widow it was contended that the evidence was not admissible because the inquest was illegally held. But even if the illegality of the inquest be conceded, said the Court of Appeals, that fact would not render the evidence of the physicians inadmissible. As a general rule applied in practically all jurisdictions, courts do not concern themselves with the method by which a party has secured the evidence which he adduces. Evidence which is otherwise admissible will not be excluded because it was fraudulently, wrongfully or illegally obtained, with the single exception that evidence obtained by search or seizure contrary to constitutional inhibitions is inadmissible in criminal cases. In the present instance the proceeding was civil, not criminal. Moreover the language of the constitution is: "The people shall be secure in their persons, houses, papers and possessions from unreasonable search and seizure." The words "persons," "houses," and "papers" may be excluded from consideration as not descriptive of a corpse. The only question is whether a corpse is a "possession." The word "possessions" includes nothing but property and is confined in its application to things intimately associated with the person. The widow has certain rights in the corpse of her deceased husband but the authorities uniformly hold that there is no right of property in the ordinary sense of that term in the dead body of a human being. A corpse, said the court, is

not a possession and an autopsy is not an unreasonable search and seizure within the contemplation of the constitution.

Even though the coroner's report of the inquest was inadmissible and was properly excluded, the workmen's compensation board did not err in admitting the evidence of the physicians as to what they saw during the autopsy. It was proper for them to give their opinions as to the cause of death.

Death from Inhalation of Poisonous Fumes

(*Adler v Interstate Porter Co (Minn.) 250 N W 486*)

Adler a stoker, in the course of his employment pulled out a charge from an upper retort and was exposed to the fumes of coal and coke. When he completed the task he complained of a pain in his head and across his chest. He felt sick and vomited severely. He ceased work and was taken home and placed in a chair from which he fell a few moments later and died. Immediately thereafter an autopsy was performed. In compensation proceedings instituted by the widow the pathologist who performed the autopsy testified before the industrial commission that Adler's body was that of one of the healthiest men he had ever examined and that in his opinion Adler died "as a result of probably inhalation or injection of some poisonous substances presumably derived in some way or other from the destructive distillation of coal. The conclusion of the pathologist was not disputed nor was any other cause of death suggested. The commission nevertheless denied compensation. The widow appealed to the Supreme Court of Minnesota which reversed the decision of the commission.

All causes of death other than the inhalation or injection of poisonous substances coming from the distillation of coal and the Supreme Court, were eliminated, so far as was possible in the hearing before the industrial commission. The conclusion of the pathologist was not disputed. No cause other than the one he assigned was suggested. It compensation be denied the opinion reached by a competent pathologist given with a rather definite degree of certainty after a thorough an autopsy as could be performed and under as favorable conditions as could be had, must go for weight, and the cause of death be unascertained. This cannot be so. It is true that the physician could not testify as to an exact certainty. He could not give the definite gas or poisons or combination which brought about the result. It is true that he admitted under cross examination that in reaching results there might be such a thing as conjecture or speculation. There is no question of his credibility. The burden of proof of course, is on the claimant and she cannot rest a recovery merely on speculation or conjecture. In the practical administration of the compensation act however the unassured opinion of the physician, with the uncontradicted circumstances supporting it, should be taken as a correct statement of cause of death.

The employer and the insurance company, however contended that even conceding that death came from an inhalation or injection of gas or poison it was not an accident. The workmen's compensation act said the Supreme Court defines an accident as 'an unexpected or unforeseen event happening suddenly and violently with or without human fault and producing at the time injury to the physical structure of the body.' G S 1923 (1 Mason 1927) Sec 4326(h). The evidence here presented clearly indicates an accidental injury.

Malpractice Care and Skill Correlated—The physician owed the plaintiff a duty to exercise ordinary care and skill. His failure to exercise either would be negligence. If he was incompetent and attempted an operation which he knew he could not perform it would be negligence. So the term negligence covers not only a lack of care but also failure to exercise skill which the person possesses and the attempt to exercise skill which he knows he does not possess.—*Rothschild v Baerl (Mo.) 26 S W (2d) 760*

Malpractice Unpleasant Taste Not Actionable—An unpleasant sensation as a result of the negligent act of another without physical or material damage, cannot be the basis of an action for damages. Where through the negligence of a dentist a patient is caused to swallow a bitter and ill tasting liquid, but sustains no ill effects other than the disagreeable stimula-

tion of the sense of taste, the patient has suffered no actionable damage. The mere fact that one event chronologically follows another is insufficient to prove a causal relation between them. Evidence that a woman suffered a pain in her heart and other physical ailments after having swallowed a liquid—the nature and character of which does not appear, except that it was suitable for hypodermic use by a dentist, while operating in a patient's mouth and possessed a bitter and disagreeable taste—is, in the absence of evidence tending to show a causal relation, insufficient to authorize an inference of fact that her condition was caused by swallowing the liquid.—*Payne v Chandler (Ga.), 153 S E 66*

Society Proceedings

COMING MEETINGS

Alabama Medical Association of the State of Birmingham April 21-24
Dr D J Cannon 519 Dexter Avenue Montgomery Secretary
American Association for the Study of Gout Kansas City Mo April
7-9 Dr J R Yung 670 Cherry Street Terre Haute Ind Secretary
American Association of Anatomists Chicago April 24 Dr George W
Corner University of Rochester School of Medicine Rochester N Y
Secretary
American Association of Pathologists and Bacteriologists Cleveland
April 23 Dr H T Karsner 2035 Adelbert Road Cleveland Secy
American College of Physicians Baltimore March 23-27 Mr E R
Joshi 133 South 36th Street Philadelphia Executive Secretary
American Gastroenterological Association Atlantic City May 4-5 Dr
Charles G Lucas 307 West Broadway Louisville Secretary
American Orthopedic Association Memphis Tennessee April 13-18 Dr
DeForest P Willard 1916 Spruce Street Philadelphia Secretary
American Pediatric Society Edgewater Park Mississippi April 15-17
Dr H C Carpenter 1805 Spruce Street Philadelphia Secretary
American Physiological Society Montreal April 8-11 Dr Arno B
Tuckhardt 5216 Greenwood Avenue Chicago Secretary May 4 Dr
American Society for Clinical Investigation Atlantic City May 4 Dr
Cyrus C Sturgis Simpson Memorial Institute Ann Arbor Mich Secy
American Society for Experimental Pathology Montreal April 8-11 Dr
C Phillip Miller Jr University of Chicago Department of Medicine
Chicago Secretary
American Society for Pharmacology and Experimental Therapeutics
Montreal April 8-11 Dr F D Brown University of Minnesota
Medical School Minneapolis Secretary
American Society of Biological Chemistry Montreal April 8-11 Dr
H B Lewis University of Michigan Medical School Ann Arbor
Mich Secretary
Arizona State Medical Association Nogales May 7-9 Dr D F
Harbridge Goodrich Building Phoenix Secretary
Arkansas Medical Society Texarkana April 21-24 Dr William R
Bathurst Boyle Building Little Rock Secretary
Association of American Physicians Atlantic City May 5-6 Dr James
H Means Massachusetts General Hospital Boston Secretary
California Medical Association San Francisco April 27-30 Dr Emma
W Pope 450 Sutter Street San Francisco Secretary
Conference of State and Provincial Health Authorities of North America
Washington D C April 29-30 Dr A J Chesley State Board of
Health St Paul Minnesota Secretary
District of Columbia Medical Society of Washington May 6 Dr
C B Conklin 1718 M Street N W Washington Secretary
Federation of American Societies for Experimental Biology Montreal
April 8-11 Dr H B Lewis University of Michigan Medical School
Ann Arbor Mich Secretary
Florida Medical Association Orlando May 11-12 Dr Shuler Richard on
111 West Adams Street Jacksonville Secretary
Georgia Medical Association of Atlanta May 12-15 Dr Allen H
Bunce 139 Forrest Avenue N L Atlanta Secretary
Hawaii Territorial Medical Association Wailuku Maui May 12 Dr
F J Pinkerton Young Building Honolulu Secretary
Illinois State Medical Society East St Louis May 5-7 Dr Harold M
Camp Lahl Building Monmouth Secretary
Iowa State Medical Society Des Moines May 13-16 Dr Robert I
Parker 3510 Sixth Avenue Des Moines Secretary
Kansas Medical Society Manhattan May 5-7 Dr J F Hassig Huron
Building Kansas City Secretary
Louisiana State Medical Society New Orleans April 14-16 Dr P T
Tallot 1430 Tulane Avenue New Orleans Secretary
Maryland Medical and Chirurgical Faculty of Baltimore April 28-30
Dr John T King Jr 1211 Cathedral Street Baltimore Secretary
Minnesota State Medical Association Minneapolis May 4-6 Dr E A
Meyerdling 11 West Summit Avenue St Paul Secretary
Mississippi State Medical Association Jackson May 12-14 Dr T M
Dye Clarksdale Secretary
Missouri State Medical Association Joplin May 11-14 Dr E J
Goodwin 634 North Grand Boulevard St Louis Secretary
National Tuberculosis Association Syracuse N Y May 11-14 Dr
Charles J Hatfield Henry Phipps Institute Philadelphia Secretary
Nebraska State Medical Association Omaha May 12-14 Dr R B Adams
Center McKinley Building Lincoln Secretary
North Carolina Medical Society of the State of Durham April 20-22
Dr L B McBrayer Southern Pines Secretary
Ohio State Medical Association Toledo May 12-13 Mr Don K Martin
131 East State Street Columbus Secretary
Oklahoma State Medical Association Oklahoma City May 11-13 Dr
C A Thompson Memorial Station Muskogee Secretary
South Carolina Medical Association Greenville May 5-7 Dr E A
Hines Seneca Secretary
Tennessee State Medical Association Knoxville April 14-16 Dr H H
Shoulters 706 Church Street Nashville Secretary
Texas State Medical Association of Beaumont May 5-7 Dr Holman
Taylor Medical Arts Building Fort Worth Secretary

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American Journal Diseases of Children, Chicago

41 1224 (Jan.) 1931

- Value and Duration of Immunity Conferred by Antidiphtheritic Antitoxin Titration of Antitoxin Present in Serum of Vaccinated Children G. Ramon and R. Debre Paris France—p. 1
- Diphtheria Immunization Percutaneous Method of Loewenstein. A. T. Alt Chicago and B. F. Feingold Cincinco Ill.—p. 5
- *Some Dye Entry Thirty Cases R. L. Nelson Boston—p. 15
- *Tuberculosis in Schools in Colorado. R. P. Forbes P. Verploeg and M. A. Bazemore Denver—p. 26
- Inexpensive Incubator for Premature Infants A. H. Parmelee Oak Park Ill.—p. 33
- Cell and Plasma Chloride in Pyloric Stenosis of Infants M. Maizels and C. B. McArthur Westminster London—p. 35
- *Professor Loewenstein's Ointment for Active Immunization Against Diphtheria A. H. Kegel and B. M. Gasul Chicago—p. 45
- Dietary Protein and Blood Clotting Function I. N. Kugelblum and E. L. Samuel New York—p. 48
- Intraperitoneal Iron C. G. Crutcher and H. N. Sanford Chicago—p. 53
- *Rickets Value of Colorado Sunshine in Prevention H. B. Stein and K. C. Lewis Denver—p. 62
- *Comparison of Antirachitic Effects of Winter and Summer Sunshine in Colorado R. C. Lewis, G. M. Frumess and H. B. Stein Denver—p. 71
- Pericarditis with Effusion. L. P. Sutton New York—p. 78
- Mediastinal Teratoma in Infant H. B. Wilcox and M. Wolfstein New York—p. 89
- Subacute Bacterial Endarteritis of Pulmonary Artery Associated with Patent Ductus Arteriosus and Pulmonic Stenosis H. Gordon and D. Perla New York—p. 98
- Empyema of the New Born J. Glaser and J. Epstein Rochester N. Y.—p. 110
- *Ulcerative Laryngitis Due to Corynebacterium Ulcerans J. G. M. Bullova New York and M. Jacoby Brooklyn—p. 120
- *Juvenile Embolic Gangrene of Upper Extremity J. D. Craig and W. E. Muns New York—p. 126
- Whooping Cough in Children Stridorous and Asthmatic Breathing C. Jackson Philadelphia—p. 153

Sonne Dysentery—Attention is drawn by Nelson to the possible importance of *Bacterium dysenteriae* Sonne as a cause of dysentery in children. Methods for the isolation and identification of the organism are given. Clinical features of the disease with eight case histories and clinical charts illustrative of the mild and severe forms are given.

Tuberculosis in Schools in Colorado—A survey for tuberculosis made by Forbes et al. in the school of a small community composed largely of health seekers where contact with the disease is unusually great, showed 36.4 per cent of 283 children from 4 to 15 years of age to be infected. This is only a moderate increase over the incidence noted in nontuberculous communities. Roentgen studies of the 103 children giving positive reactions revealed childhood tuberculosis in 19, or 67 per cent, of the whole group the average for the country at large varying from 1 to 4 per cent. No child with the adult or exudative type of tuberculosis was found. Most of the children reacting positively and those having actual childhood tuberculosis were not born in Colorado. Climatic factors in Colorado apparently exert a favorable influence in the protection of children against active tuberculous infection. In this study the father was the source of infection in 64.8 per cent of the children giving positive reactions and the mother in only 12.6 per cent. Symptoms of fatigue, undernutrition and a history of frequent colds are said to be not reliable aids in the diagnosis of childhood tuberculosis.

Loewenstein's Ointment for Immunization Against Diphtheria—Twenty-six, or 55.3 per cent of forty-seven children who were given three injections of Loewenstein's ointment for active immunization against diphtheria gave negative reactions to the Schick test within six weeks. No local or general reactions were noted by Kegel and Gasul.

Rickets Colorado Sunshine in Prevention—Experiments made by Stein and Lewis show that in Colorado direct sunlight in June and July has a marked antirachitic action on rats, even when the average daily exposure is as little as three and three fourths minutes. Only a mild degree of rickets is evident in rats exposed to direct sunlight for seven and one-half minutes. The high antirachitic potency of Colorado sunshine may be explained by the fact that the atmosphere is relatively free from moisture and smoke. Sunshine has an apparent beneficial effect on growth.

Antirachitic Effects of Winter and Summer Sunshine in Colorado—The experimental results obtained by Lewis et al. do not support the contention of Tisdall and Brown at least as far as Colorado is concerned, that suddenly about the first of March there is a marked increase in the amount of ultraviolet radiations reaching the earth. There is no marked difference in the antirachitic effect of winter and summer sunshine in Colorado. The comparatively high antirachitic action of Colorado sunshine with relatively little seasonal variation as compared with that of other places where similar studies have been made may be explained on the ground that throughout the year relatively short wave radiations reach the earth as a result of the high percentage of winter sunshine, the low humidity and the small amount of smoke in the atmosphere.

Ulcerative Laryngitis—A case of fatal ulcerative laryngitis due to an atypical organism resembling the diphtheria bacillus and producing only a slight fibrinous reaction is reported by Bullova and Jacoby. The organism yielded by a culture from a laryngeal ulcer was identified as the *Corynebacterium ulcerans* of Gilbert and Stewart previously isolated only from nonfatal upper respiratory infections. Both organisms produce extensive necrosis and ulceration without the formation of a typical diphtheritic pseudomembrane. The immunologic study of cases of diphtheria not responding to antitoxin is suggested.

Juvenile Embolic Gangrene of Upper Extremity—A case of aortic stenosis of rheumatic origin with an accompanying embolic gangrene of the right hand in a child is reported by Craig and Muns.

American Journal of Orthopsychiatry, Menasha, Wis.

1 107 237 (Jan.) 1931

- One Hundred Problem Children for Whom Foster Care Was Advised C. D. Hopkins and A. R. Hynes Chicago—p. 10
- Drawings by Children as Aids to Personality Studies K. E. Appel Philadelphia—p. 129
- Inquiry into Status of Psychiatric Social Work M. C. Scofield New York—p. 145
- Relationship Between Intelligence and Economic Status as Factors in Etiology of Children's Behavior Problems J. Levy New York—p. 152
- Retraining in Reading New Method I. Regenstein, New York—p. 16
- Causes of Delinquency in Relation to Family Attitudes P. E. Moulton Boston—p. 173
- Study of Personalities of Gifted Students by Means of Control Group A. J. Conklin—p. 175
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American Journal of Pathology, Boston.

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Inclusion Bodies of Fowlpox and Molluscum Contagiosum—Goodpasture and Woodruff state that the inclusion bodies of molluscum contagiosum may be freed from surrounding cellular material by tryptic digestion. Unlike fowlpox

inclusions, the molluscum bodies are found to be sticky and gelatinous after they have been digested. Because of this characteristic they cannot be manipulated readily with the Chambers microdissection apparatus. The gelatinous matrix of the molluscum bodies has a markedly granular appearance, owing to the presence within it of myriads of Lipschutz granules—minute coccoid structures, 0.25 micron in diameter. These granules are identical in size, shape and staining reactions with the Borrel bodies of fowlpox. They are resistant to the action of trypsin. The inclusion bodies of molluscum, on being placed in distilled water show little or no swelling. Under similar conditions the fowlpox inclusions swell markedly, as the result, probably of their lipid material acting as a semipermeable membrane. Trituration of the molluscum inclusions readily breaks them up into the component Lipschutz granules. Fowlpox inclusions similarly treated fail to break up so readily into Borrel bodies. This difference in the reaction of molluscum and fowlpox to trituration may afford an explanation for the relatively greater filtrability of the former. Fowlpox and molluscum contagiosum are apparently specific for fowls and man, respectively. Cross inoculation experiments having proved unsuccessful. Attempts to transfer molluscum to monkeys and other laboratory animals were also unsuccessful.

Transformation of Sinusoidal Endothelium into Capillary Type.—In granulation tissue produced within the liver of rats, McJunkin noted that the capillaries may arise in the usual way by angioblastic proliferation or sinusoids may persist as capillaries. In both instances the vessels are continuous with the sinusoids in the adjoining lobules. With loss of contact with living hepatic epithelium the endothelium becomes less phagocytic. The peculiarities of sinusoidal endothelium depend on its functional activity, which in turn is determined by its normal histologic position. From the behavior of sinusoidal endothelium present in granulation tissue, it appears not to be a distinctive type of cell.

Polymorphocellular Tumors in Region of Knee.—Hunter describes two instances of benign polymorphocellular tumors occurring in the region of the knee in closely related persons. In the daughter, the new growth originated in the synovial membrane, a rare site for the formation of tumors and was benign. In the father, the tumor was of exceptionally long duration, attained very bulky dimensions and although exhibiting locally destructive properties also appears to have been benign. Because of the large size and extensive ramifications of the mass, the point of origin could not be determined, but certain facts point to an extra-articular source. Most commonly, new growths of the type reported arise from the sheaths of tendons and only rarely from the capsule or synovial membrane of joints. In the latter event the knee is much more frequently involved than any other joint in the body. The rarity of such growths of the joints is evidenced by the fact that the author was able to collect from the literature, in addition to his own cases, only forty-four instances of closely similar or identical tumors.

Circulatory Pattern in Islands of Langerhans.—Beck and Berg made anatomic studies of the circulatory pattern in the islands of Langerhans in white mice. The arrangement consists of a network of capillaries which are supplied with blood through afferent arterioles, empty into efferent venules, and anastomose freely with intercapillary capillaries. An analysis of the vascular system of the islands shows that the arrangement of the vessels favors the circulation of a large volume of blood with maximum efficiency. Since the arterial pressure diminishes directly with the length of the vessel it is higher at the end of a short arteriole than at the end of a longer one assuming the diameters to be equal. Therefore the short direct arterioles to the islands afford a higher pressure for the column of blood entering the capillary network than the long arterioles supplying the capillaries of the acinar tissue situated at the periphery of the lobules. When the capillary bed of the islands is larger, more than one arteriole is present. On the venous side the multiple short efferent venules of the islands insure a low venous pressure with minimal resistance to the egress of blood. Regardless of the position of the islands in the pancreatic lobules the dynamics of the circulation remain unaltered. These pressure relationships explain why the islands remain intact in

advanced chronic passive congestion, whereas the acini in the peripheral parts of the lobules undergo extensive atrophy. On the one hand, the pressure in the short arterioles to the islands is sufficient to overcome the increased resistance in the venous system. On the other hand, the pressure in the arterioles to the outlying acini is insufficient to overcome the venous resistance, which is augmented by stasis in the long efferent venules. As a result, the nutrition of the islet cells remains undisturbed while degeneration of the acini occurs. The few acini that remain intact are found in the immediate vicinity of the islands, where the circulation is best. When thrombosis, embolism, sclerosis or spasm of the afferent arterioles occur, the capillary anastomoses can form a collateral circulation, which maintains an adequate blood supply to the islands. This mechanism probably accounts for the few changes that are observed in the islands in the presence of arteriolar lesions. Examination of the circulatory patterns of the islands of Langerhans in the pancreas of the guinea pig, white rat, monkey and man revealed that they were similar to those of the white mouse.

Interacinar Epithelium of Thyroid.—Moritz states that in normal thyroids of fetuses, children and adults, in pathologic glands the seat of hypertrophy and hyperplasia, in nodular goiter, and in adenomas of the thyroid, the mechanics of hyperplasia are essentially similar. New follicles are formed by intrafollicular and extrafollicular proliferation of epithelium and the secondary follicles may lose their parent connection and become isolated units. In the scattered foci of hyperplasia in normal thyroids, as well as in glands that are the seat of pathologic hypertrophy and hyperplasia, labyrinthine intercommunication of acini exists and is probably limited to the connection of primary with secondary acini. Solid masses of undifferentiated interfollicular epithelium are found in both normal and pathologic glands, but such masses are readily accounted for as detached extrafollicular buds. Evidence contrary to certain observations by Rienhoff concerning the mechanics of hyperplasia in the thyroid is presented.

Experimental Glomerulonephritis in Monkey.—Bell and Clawson produced a form of chronic diffuse glomerulonephritis in a monkey by repeated intravenous injections of streptococci over a period of four years. The lesion was characterized histologically by marked increase in capillary endothelium and increase in the thickness and number of layers of the capsular basement membrane. Histologically the glomerular lesion resembled human lipoid nephrosis of mixed type, except that no fat was present.

Hypernephroma with Tumor Thrombosis of Vena Cava and Heart.—Polyses and Trift report a case of hypernephroma with malignant thrombosis by invasion of the inferior vena cava and heart. It is the fifth case described and was unique in its extent of involvement. The entire inferior vena cava and all its main tributaries (ilic, renal and hepatic veins) were occluded by a continuous malignant thrombus which extended into the right atrium, through the tricuspid valve into the right ventricle. The cardiac involvement here was even more extensive than in the case described by Weber, in which the thrombus did not extend beyond the right atrium. Another interesting feature was the fact that, in spite of the massive involvement of the inferior vena cava and the right kidney, the right suprarenal remained singularly free from metastasis.

Chronic Typhoid Cholecystitis.—Mallory and Lawson describe the gross and histologic appearance of the gallbladders of seven typhoid carriers. A common histologic picture was found. A review of 400 routine slides of chronic cholecystitis showed a similar lesion in 65 per cent of the cases. A review of the clinical histories showed that only 49 per cent of the cases with negative histories showed this picture, as against 25 per cent of cases with positive histories. It is felt that the lesion described is characteristic of chronic typhoidal cholecystitis but not pathognomonic of it. It is suggested that it is not specific of any organism but represents a reaction to persistent infection of the bile in contrast to the more usual type of chronic cholecystitis with sterile bile and persistent infection of the wall.

Infectious Cirrhosis.—According to MacMahon uncomplicated infectious cirrhosis is one of the rarer diseases of the liver. It is caused probably in most instances by the colon

bacilli and is characterized by a variable degree of connective tissue and bile duct proliferation about the portal trunks. Obstructive cirrhosis resulting from prolonged biliary obstruction is a much more common condition although less conspicuous and hence frequently overlooked. Most cases of infectious cirrhosis are found in combination with obstructive cirrhosis but even this combined type is relatively rare and is almost invariably fatal.

American J Roentg & Radium Therapy, New York

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Choleystographic Diagnosis of Papillomas of Gallbladder B R Kirklin Rochester Minn —p 46
Peptic Ulcer Diagnostic Value of Roentgen Ray Before and After Treatment E S Emery Jr and R T Monroe Boston —p 51
Roentgenologic Findings in Seventy Two Cases of Traumatic Myelitis Due to Fracture of Spine I S Gurdjian Detroit —p 65
Methods Used for Measuring Roentgen Ray Applied Intensity U A Portmann Cleveland —p 74
High Voltage Roentgen Radiation (200 Kv) on Fertility and Motility of Sperm of Rabbit S A Asdell Ithaca N Y and S I Warren Rochester N Y —p 81
Meniscus Calcification Roentgen Findings in Disease of Meniscus of Knee J Isakovsk Berlin Germany —p 85
Tuberculous Ulceration of Duodenum R J Reeves Durham N C —p 88
Dwarfism Due to Disordered Epiphyseal Development H E Ruggles San Francisco —p 91

Peptic Ulcer Diagnostic Value of Roentgen Ray —

A study has been made by Emery and Monroe of the value of the roentgen ray to the clinician in following the treatment of patients with ulcer of the stomach or duodenum. The accuracy of the roentgen examination is shown to be high as compared with most kinds of laboratory procedures. However, it is a mistake for clinicians to place implicit confidence in the results of the roentgen observations and to discard entirely the older methods of investigation. It was found that a correct diagnosis was reached in 93 per cent of those patients having an ulcer. Retention as shown by roentgen examination was found to give a true picture of clinical retention in 67 per cent of cases. The presence or absence of tenderness over an ulcer was found to have no clinical value. A study of the roentgen observations and the clinical symptoms shows that it is not possible to diagnose a healed duodenal ulcer by the roentgen ray. Moreover the data support the idea that duodenal ulcer is a chronic disease which is rarely cured by treatment.

Traumatic Myelitis Due to Fracture of Spine —Gurdjian asserts that roentgen studies are important in cases of fractured spine with cord injury. Although films can be of aid in diagnosis, they should always be considered in association with other methods of clinical and laboratory approach. Some cases of certain transection of the cord on the basis of roentgen observations may not show any signs of cord damage even on neurologic examination.

Canadian Medical Association Journal, Montreal

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- Recoil Following Visceral Decompression W I de C Wheeler Dublin —p 3
Things New and Old D A Stewart Ninette Manitoba —p 9
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Analgesia and Anesthesia in Childbirth A L McIlroy London —p 21
Treatment of Paranasal Suppuration Persisting After Operation P G Goldsmith Toronto —p 26
Filterable Viruses and Practice Medicine S P Bedson London —p 36
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Indications and Contraindications for Spinal Anesthesia J Parry Hamilton Ont —p 64
Acute Obstruction of Small Bowel G H Strick Belleville Ont —p 70
Functional Basis of More Common Cerebral Symptoms M J Wilson Toronto —p 74
Administration of Gastric Antacids J T A Johnston and A E Henderon Toronto —p 77
Diagnosis and Treatment of Renal Calculi G S Foulds Toronto —p 79
Intracranial Method of Skeletal Traction in Treatment of Fractures R K Fitzgerald Montreal —p 83

Recoil Following Visceral Decompression —Wheeler emphasizes the fact that when an organ or system is suffering directly from pressure effects or indirectly from back pressure the greater the pressure the more gradual should be its relief.

This applies particularly to such conditions as uremia following the release of back pressure on the kidneys, hepatic shock in portal obstructions or obstructions of the common duct with or without ascites, toxemia and other morbid conditions in the presence of intestinal obstruction and flapping mediastinum in acute emphysema. The dangers attending a too generous tapping of the pleural or peritoneal cavities for effusions and the risks of spinal puncture when the pressure is high, are also included. The problems involved however are by no means confined to the realm of surgery. One finds patients with back pressure on the heart from disease and narrowing of the arteries with resultant hypertrophy, dilatation and cardiac failure. As the back pressure continues and increases compensation fails and secondary lethal changes (often renal) complete the picture. If it were possible by the use of drugs to reduce the blood pressure suddenly the cure would be admittedly worse than the disease. Cardiac and renal failure would inevitably result. Physicians must take only those depressor drugs should be chosen which have the slowest and most prolonged action. Anesthetists are alive to the dangers of sudden decompression. Anesthesia by spinal injection or chloroform inhalation must be cautiously adopted or entirely avoided in the presence of high blood pressure. The rapid fall so frequently noted in either of these methods is employed produces at times an alarming reaction including sudden failure of the cardiac pump or stoppage of renal function. In ophthalmic departments the ophthalmologist deals with glaucoma by the very slow withdrawal of aqueous humor from the anterior chamber. By gradual decompression vascular dilatation, intraocular hemorrhage and retinal detachments are avoided. Obstetricians are concerned in cases of hydramnios. If the formation of fluid is slow the system accommodates itself to the increasing pressure but if it is rapid the circulation suffers, the lips, hands and feet become cyanosed, there is indigestion and vomiting and albumin appears in the urine. Bursting of the membranes, on the other hand, causes a recoil that induces syncope by rapid reduction of intra-abdominal tension. When inducing labor in cases of hydramnios the obstetrician lays especial stress on the necessity for preventing a sudden outpouring of the fluid. To effect this control and to insure the slow escape of the waters a very small or valvular aperture is provided. Again in cases of imperforate hymen leading to hematocolpos the obstructing membrane is punctured with a trocar and cannula and the fluid allowed to drain slowly away during the first twenty-four hours. If the fluid is not drained slowly the patient may pass into a condition that is usually described as one of extreme shock.

Analgesia and Anesthesia in Childbirth —McIlroy states that each maternity case must be given individual attention with regard to the most suitable sedative and anesthetic to be employed. The age, parity, temperament, general health and complications if present must all be carefully considered. Obstetric anesthesia is not quite comparable with the surgical form. The pain is prolonged and has to be combated with sedatives as well as with anesthetics. The effect of these sedatives must be taken into consideration when an anesthetic is decided on. Light anesthesia is of little use in surgery while it is generally employed in midwifery practice except in cases in which operative intervention is required. The action of the uterus must be maintained and hemorrhage after delivery must be prevented as far as possible. The expenditure of time with its consequent financial complications is a consideration. It is desirable that private patients should have the continuous attendance of the practitioner during labor, if sedatives or anesthetics are to be given just as in a hospital practice. It is a common mistake to carry out violent methods of artificial respiration in the infant does not breathe immediately after birth. One has to remember that it is narcotized to some extent and requires time to recover warmth and clearance of its respiratory passages are sufficient in most cases of delayed respiration but carbon dioxide and oxygen should be given if there is any undue delay.

Paranasal Suppuration Persisting After Operation —Goldsmith believes that persistence of discharge from the maxillary sinus after operation does not necessarily require further surgical measures of a more radical nature. The main symptoms for which the patient consulted the physician are

as pain or discomfort in the head, nasal or postnasal discharge, nasal obstruction, recurring "head colds" or mental depression or lessening of the power of concentration, may have been so greatly benefited that even if some nasal or sinus secretion persists it may not be of sufficient importance to require further instrumental intervention. The extraordinary efforts made to detect the slightest amount of mucoid secretion in an accessory air cell and the ridiculous importance allotted to its presence are further evidences of the extent to which the subject of foci of infection has clouded clinical vision and made physicians forget their elementary physiology. Taking each cavity by itself the author enumerates some of the reasons for failure in operative treatment to secure complete relief from undue secretion.

Administration of Gastric Antacids—An examination of the literature on this subject by Johnston and Henderson revealed the fact that sodium bicarbonate is now much less favored than it was some years ago. If excess amounts of sodium bicarbonate or of magnesium oxide are added to a hydrochloric acid solution of the strength of gastric juice (0.3 per cent) the solution becomes alkaline within one minute, but the alkalinity produced by sodium bicarbonate and magnesium oxide leads in turn to a fresh secretion of gastric juice. If sodium citrate is added to such a solution of hydrochloric acid, the mixture will give an acid reaction with certain indicators and a neutral reaction with others. One would expect to find in such a mixture sodium chloride, some sodium citrate, citric acid and a trace of hydrochloric acid. Apparently it would contain as much acid as the original hydrochloric acid and by titrating the mixture with sodium hydroxide solution and a suitable indicator this would be the result obtained. But today, acidity is judged rather by the amount of free hydrogen ion present, and by this standard the mixture will have a neutral reaction which is expressed as pH 7.0. The original hydrochloric acid solution would be very acid (pH 1.0). This is due to the fact that the citric acid in such a solution largely exists as citric acid and liberates very few hydrogen ions while in such a hydrochloric acid solution almost all the hydrogen ions are free. The same type of reaction occurs with potassium citrate or any acetate. If tribasic calcium and magnesium phosphates are added to an artificial gastric juice the mixture becomes neutral (pH 7.0) in a minute and stays neutral. Calcium carbonate brings about neutrality more slowly, but the mixture does not become alkaline (i. e., does not attain a pH of more than 7.0). Bismuth carbonate only reduces the acidity (to pH 4.0). By weight, magnesium oxide is the most efficient neutralizer. About four times as much sodium bicarbonate and five times as much of the citrates or tribasic phosphates are required.

Endocrinology, Los Angeles

14 385 461 (Nov. Dec.) 1930

- *Role of Pituitary Posterior Hormone in Fat Metabolism. W. Raab. Prague, Vienna.—p. 385.
- Estrogenic Substances: Analysis of Plant Sources. B. S. Walker and J. C. Ianney. Boston.—p. 389.
- *Iodine Reaction in Exophthalmic Goiter. W. O. Thompson and P. K. Thompson. Chicago.—p. 393.
- *Effect of Anterior Pituitary Extract on Developing Albino Mouse. G. E. Johnson and R. T. Hill. Manhattan, Kan.—p. 400.
- Stimulative Effect of Roentgen Rays on Glands of Internal Secretion. M. B. Gordon. Brooklyn.—p. 411.

Pituitary Posterior Hormone in Fat Metabolism—On the basis of a series of experiments on dogs, Raab states that large subcutaneous or smaller intraventricular doses of pituitary extract decrease the neutral fat content of the blood. The reaction is abolished by mechanical destruction or pharmacologic paralysis of the centers in the tuber cinereum, after transection of the spinal cord, after paralysis or section of the abdominal splanchnic or after paralysis of the latter with ergotamine, or after phosphorus poisoning. An accumulation of fat in the liver and a decrease of the peripheral tissue fat has been noted after injection of pituitary extract. The conclusion is drawn that pituitary extract promotes the absorption and destruction of circulating fat by the liver through a nervous pathway starting in the tuber cinereum and running through the cervical spinal cord and the abdominal splanchnic to the liver. Any disturbance of the cooperative pituitary-mesencephalic system would lead to a retention of excess amounts of fat in the body and

thus lead to obesity. Comparative determinations of arteriovenous fat suggest that pituitary extract does not affect deposit fat directly. There seems to be a close relationship between the pituitary extract-nervous mechanism for fat destruction and the so-called chemical heat regulation. The author has observed verified cases of purely hypophyseal and purely mesencephalic obesity.

Iodine Reaction in Exophthalmic Goiter—According to the Thompsons in Boston the smallest amount of iodine that will produce any reduction in basal metabolism in exophthalmic goiter is greater than 0.75 mg. daily in about two thirds of the cases. The minimum amount that will produce a maximum reduction is roughly 6 mg. daily in the majority of cases. Between these two limits, the relation between the percentage approach of the basal metabolism toward the normal level and the size of the dose is roughly linear. The effective dose has not been determined in Chicago but it is known that 6 mg. a day will cause a marked reduction in basal metabolism in some cases. Iodine must be administered at a certain minimum rate in order for the maximum effects to be produced. It also appears that this rate may be one that is sufficient to cause colloid to be stored at an adequate rate. In a few cases the reaction to iodine is reversible. The administration of a small dose such as 15 mg. daily may sometimes interfere with the effect of a much larger dose administered immediately afterward. In the routine treatment of the disease, it is desirable to give initially an excess of iodine sufficient to produce maximum effects. The amount necessary to do this is undetermined but probably is not more than 30 mg. (roughly 5 drops of the compound solution) daily. In patients who develop refractoriness to iodine it is wise to postpone operation until iodine has been omitted long enough to allow the refractoriness to disappear. In a large percentage of mild cases of the disease improvement may be maintained for long periods by iodine, whereas moderately severe or severe cases rarely show more than temporary improvement. Myxedema may occasionally develop during the administration of iodine to patients who have a normal basal metabolism following subtotal thyroidectomy for exophthalmic goiter and to patients with mild untreated cases of the disease.

Effect of Anterior Pituitary Extract on Albino Mouse—Johnson and Hill found that the daily injection of bovine anterior pituitary extract (alkaline, later neutralized and filtered) into twenty-one female and fourteen male albino mice produced an increase in growth over that of eleven control females and fourteen control males, which were injected with physiologic solution of sodium chloride. This increase was more marked in the females than in the males. The extract produced a marked increase in the size of the ovaries after the age of 55 days through excessive lutein body formation and persistence. Only one experimental female had a normal ovary with the few corpora lutea associated with normal function, and this was a pregnant animal. Increased lutein formation was associated with a high degree of sterility, but apparently also with an excess number of tubal ova. None of the control females had an excessive number of corpora lutea. In the injected male mice, seven showed a hardening of the testicular wall. Some showed an increase in interstitial tissue and there was some destruction of seminiferous epithelium. Excess colloid was formed in some of the Cowper's glands. The experimental male mice showed a high degree of sterility compared to the normal males.

Journal of Allergy, St. Louis

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- Importance of Food Sensitization in Allergic Rhinitis. G. Piness and H. Miller. Los Angeles.—p. 76.
- Food Anaphylaxis. C. Richet, Jr. Paris.—p. 76.
- Pollen and Pollen Extracts. V. Skin Reactions to Pollen Fractions. M. B. Moore, H. W. Cromwell and E. E. Moore. Indianapolis.—p. 83.
- Elimination Diets for Diagnosis and Treatment of Food Allergy. A. H. Rowe. Oakland, Calif.—p. 92.
- *Allergic Headache. C. H. Eyer mann. St. Louis.—p. 106.
- *Skin Tests to Foods in Asthma. F. M. Rackemann. Boston.—p. 113.
- *Allergic Dermatitis. C. M. Stroud. St. Louis.—p. 118.
- Angioneurotic Edema: Unusual Manifestations. W. T. Vaughan and E. K. Hawke. Richmond, Va.—p. 125.

Allergic Headache—Until more knowledge is obtained regarding migraine and further clinical studies are made of the type of headache induced by the ingestion of specific food, it is suggested by Eyer mann that the term "allergic headache,"

rather than "allergic migraine" he employed to describe this condition. It is suggested that either increased intracranial pressure or cerebral edema may be the pathologic causation and that in some instances the condition may be analogous to, or a manifestation of, angioneurotic edema.

Skin Tests to Foods in Asthma—Skin tests to foods made by Rackemann in a series of 595 patients gave positive results in 32.3 per cent of the 207 children and 21.8 per cent of the total. Foods which reacted most commonly were wheat and eggs. Positive tests to foods may or may not be of clinical importance, as shown by illustrative cases. Despite a negative skin test, specific food sensitiveness may exist.

Allergic Dermatitis—Success in the treatment of allergic dermatitis, Stroud says, is proportionate to knowledge of the causative factors. In a series of fifty cases positive skin reactions occurred in twenty-four. With institution of antiallergic measures eight patients were relieved and thirty-two were improved.

Journal of Lab & Clinical Medicine, St. Louis

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- Path of Absorption and Excretion of Sodium Tetraiodophenolphthaleim A. J. Dehrio New York—p. 329
Effect of Calcium Precipitating Substances on Ciliated Epithelium of Maxillary Sinus W. I. Wenner St. Louis—p. 341
*Paroxysmal Hemoglobinuria Case O. Swineford, Jr. University Pa.—p. 344
Effects of Amytal Anesthesia J. M. D. Olmsted and G. Giragossintz Oakland Calif.—p. 354
Leukocytic Reaction to Injections of Nonspecific Protein R. L. Larsen and A. A. Janson Evanston Ill.—p. 362
Influence of Anticlotting Agents on Transplantation and Growth of Tumor Tissue A. Goerner Long Island N. Y.—p. 369
Fatal Anaphylaxis in Man W. M. Sheppe Wheeling W. Va.—p. 372
Ringworm of Feet: Value of Microscopic Examinations H. S. Paynter and C. White Chicago—p. 380
Further Experiences with Simplified Technic for Hepatectomy S. Soskin Toronto—p. 382
*Schilling Index in Appendicitis R. H. Goodale and M. E. Manning Worcester Mass.—p. 386
Method for Germicidal Assay of Soaps H. C. Hamilton and F. Thistlethwaite Detroit—p. 391
Culture of B. Morganii No. 1 Isolated from a Parrot M. B. Coleman Albany—p. 396
Microscopic Slide Precipitation Test for Syphilis with Spinal Fluid B. S. Kline and C. R. Rein Cleveland—p. 398
Slide Method of Titrating Blood Grouping Sera A. F. Coca New York—p. 402
Mechanical Staining Device G. I. Rohdenburg New York—p. 408
Determination of pH of Phosphate Buffer Solutions by Means of Antimony-Antimony Oxide Electrode R. J. Fosbender Philadelphia—p. 411
Chart for Computation of Daily Basal Metabolism and Percentile Basal Metabolic Rate from Spirometer Data C. Bruen New York—p. 415
Further Modification of Varney Anaerobic Jar L. R. Anderson Baltimore—p. 419
Microscopic Diagnosis of Acid Fast Organisms R. L. Barnhart and F. E. Ebersson San Francisco—p. 421
Dust Shield on Still for Intravenous Solutions R. B. Stout Madison Wis.—p. 422

Paroxysmal Hemoglobinuria—A case of paroxysmal hemoglobinuria is reported by Swineford. He wonders whether an appreciable number of anemias of late syphilis may not be due to unrecognized abortive, subhemoglobinuric attacks of paroxysmal hemoglobinuria.

Fatal Anaphylaxis in Man—A case of sudden death following the injection of foreign protein is reported by Sheppe with complete postmortem observations. It is offered as an example of true fatal anaphylaxis of the bronchospastic type in man. Fifteen other cases coming to necropsy are analyzed. Evidence is offered to show that thirteen of these cases were probably examples of true anaphylaxis in man. In each of the thirteen instances death occurred either from bronchospasm or splanchnic dilatation. The theory is advanced that an entirely different mechanism (possibly thymicolymphatic) is responsible for post-injection deaths not exhibiting bronchospasm or splanchnic dilatation at necropsy. It is urged that all fatalities from injection of serum be subjected to necropsy for (a) elimination of other and unsuspected causes of death, (b) recording of careful observations relative to the condition of the pulmonary, thymicolymphatic and splanchnic systems, and (c) accurate classification of type of reaction based on anatomic observations.

Schilling Index in Appendicitis—The Schilling index, white count and microscopic observations were noted by Goodale and Manning in forty appendectomies, ten appendices

were acutely inflamed. There was a definite shift to the left or an increase in young forms of the neutrophils in the acutely inflamed appendixes. The remaining appendixes showing no acute pathologic changes had little or no increase in young forms despite an increase in several of the white counts. The white counts and total percentage of neutrophils do not always run parallel with the infection in the appendix. In view of these observations they believe that the Schilling index in addition to the white count renders a more accurate picture of the pathologic condition of the appendix than the white count with the ordinary differential.

Microscopic Slide Precipitation Test for Syphilis with Spinal Fluid—The microscopic slide precipitation test for syphilis with spinal fluid described by Kline and Rein is said to be more sensitive than the Wassermann test with the same antigen and much simpler in detail, requiring no titrated hemolytic system of cells, amboceptor and complement. Furthermore, it requires no concentration of the globulins of the spinal fluid; it is performed with antigen emulsions that are satisfactory for use for twenty-four hours and the results of the reaction magnified about 120 times by the microscope are read accurately with ease.

Slide Method of Titrating Blood-Grouping Serums—A convenient method of titration of isoagglutinating serums is described by Coca with which the highest titrated serums may be selected as test serums for grouping purpose. A standard of agglutinating power is laid down for such selection. The grouping serums offered to the profession by three reputable commercial biologic houses have been examined and all of them were found to fall below the standard, most of them being quite unsuitable for grouping purposes.

Journal of Urology, Baltimore

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- Urologic Nomenclature M. L. Boyd Atlanta Ga.—p. 1
Anomalous Renal Rotation and Associated Anomalies W. I. Brieh Pochester Minn.—p. 9
Renal Complications of Prostatism N. P. Rathbun Brooklyn—p. 12
Unusual Duplication of Renal Pelvis H. C. Bump Jr. Rochester Minn.—p. 39
Calculus Pyonephrosis in Carcinomatous Horseshoe Kidney D. H. Melen and I. Caspar New York—p. 43
Vegetative Syphiloma of Bladder L. F. Ajamil Havana Cuba—p. 53
Arterial Valves in Penile Arteries E. W. Huich Chihuahua—p. 61
Gonorrheal Urethritis in Male Children Sexual Impulses L. M. Bolin Chicago—p. 69
Para Urethritis S. J. Silbar Milwaukee Wis.—p. 83
Leiomyoma of Prostate I. J. Wolman Philadelphia—p. 93
Nonoperative Treatment of Prolapse of Urethra C. R. Livermore Memphis Tenn.—p. 99
Deep Urethrectal Fistula Following Suprapubic Prostatectomy Cured by Three-Stage Operation R. C. Craves Boston—p. 101
Unilateral Catheterization R. L. Schulz Los Angeles—p. 10
Grounding in Cystoscope Lighting Devices D. M. Davis and J. J. Whitehead Baltimore—p. 111

Laryngoscope, St. Louis

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- Importance of General Medicine in Practice of Otolaryngology D. H. Walker Boston—p. 1
Acute Suppurative Otitis Media E. R. Roberts Bridgeport Conn.—p. 7
Otitic Premia Without Sinus Thrombosis Following Rupture of Eustachian Membrane T. E. Beyer Denver—p. 11
Simultaneous Meningitis and Surgical Mastoiditis: Surgical Dilemma Recovery V. Dabney Washington D. C.—p. 14
Radium Seed in Ethmoid R. Kramer New York—p. 17
Recovery of Acute Osteomyelitis of Skull Following Operation on Frontal Sinus J. F. Friesen Los Angeles—p. 19
Observations in More Than 100 External Ethmoidal Operations W. L. Simpson and S. H. Sanders Memphis—p. 23
Diagnosis of Laryngeal Conditions D. H. Jones New York—p. 29
Paralysis of Superior Laryngeal Nerve as Result of Cerebral Hemorrhage F. S. Munzer Clearfield Pa.—p. 33
Dysphagia of Septic Origin Resembling Foreign Body in Esophagus W. B. Chamberlin Cleveland—p. 36
Poutine Suction Closure of Tonsils Prior to Tonsillectomy J. B. H. Waring Cincinnati—p. 39
Dermatosis on Mucous Membranes—Diagnosis Cited of Prior to Periphagus of Throat P. Katz, Los Angeles—p. 44
Neuralgias of Head S. Brock New York—p. 48

Maine Medical Journal, Portland

22 116 (Jan.) 1931

- Aortic Aneurysm E. H. Drake and J. R. Hamel Portland—p. 2
Traumatic Head Injuries E. H. Riley Waterville—p. 6
Congenital Pyloric Stenosis C. H. Pargess Bangor—p. 9

Minnesota Medicine, St Paul

14 1112 (Jan) 1931

- *Bacteriology of Acute Rheumatic Fever Experimental Basis in Animals for Vaccine Therapy B T Clawson Minneapolis—p 1
- *Rheumatic Fever in Childhood H F Helmholz Rochester—p 5
- *Rheumatic Carditis M H Hoffman St Paul—p 8
- Protein Pathologic Manifestations of Rheumatic Fever E I Gardner Minneapolis—p 12
- Nonarticular Forms of Rheumatic Fever H Oertling St Paul—p 14
- *Acute Bowel Obstruction O H Wangenstein Minneapolis—p 16
- Fractures of Pelvis Nineteen Cases O W Parker Rly—p 29
- *Serotherapy of Measles and Poliomyelitis C A Stewart and F S Platon Minneapolis—p 42
- Immunology of Diphtheria and Scarlet Fever W R Shannon St Paul—p 47
- Cerebrospinal Meningitis C O Kohlbrun Duluth—p 54
- *Diffuse Subcortical Sclerosis of Brain J C McKinley Minneapolis—p 62
- Localized Actinomycosis Live Cases H B Zimmermann St Paul—p 75
- Bilateral Spontaneous Pneumothorax Case J C Jamont Nopeming—p 80
- Subacute Bacterial Endocarditis Involving Tricuspid Valve Only Case H Oertling St Paul—p 82

Acute Rheumatic Fever—Clawson states that streptococcal rheumatoid lesions in animals made hypersensitive to streptococci can be prevented by intravenous vaccination. He suggests that this method of vaccination may be indicated in patients with acute rheumatic fever since such patients are hypersensitive to streptococci.

Rheumatic Fever in Childhood—Helmholz stresses the fact that rheumatic fever in childhood may be monosymptomatic or may show a few or all of the manifestations of the so called rheumatic cycle. Complicating disorders of the heart are common and constitute the serious danger of the infection. He urges that all patients with rheumatic fever should have foci of infection removed and should be given a period of from one to two months of restricted regimen. Patients with carditis or chorea should be kept at absolute rest for periods of from six months to a year, after which the normal mode of life may be resumed gradually.

Acute Bowel Obstruction—Wangenstein would label textbook descriptions of intestinal obstruction Antemortem Signs of the Disease. They do not indicate interference with the continuity of the intestinal lumen but herald impending dissolution. Regurgitant vomiting and distention must cease to be criteria awaited before a diagnosis can be made. Collapse in simple bowel obstruction should be relegated to the delineation of that antemortem status in which all vital functions rapidly depreciate and from which escape or resuscitation is unlikely. Intermittent crampy pain accompanied by nausea and considerable vomiting without abdominal rigidity or tenderness, is strongly suggestive of an acute block in the continuity of the intestine. The detection of loud intestinal noises on auscultation of the abdomen and the roentgen visualization of gas in the small intestine, lend sufficient proof to make the diagnosis. The continuance of colicky pain despite the return of gas and feces on the administration of enemata constitutes sufficient indication for immediate operative intervention.

Serotherapy of Measles and Poliomyelitis—When dealing with poliomyelitis, the therapeutic administration of convalescent human serum, preferably in the preparalytic stage of the disease is recommended by Stewart and Platon. For this purpose they give from 20 to 30 cc intraspinally together with 50 to 75 cc intravenously. Furthermore, they do not hesitate to administer the serum after paralysis occurs attempting thereby either to prevent a further extension of the paralysis or to promote as complete a recovery as possible. In the presence of severe epidemics, convalescent serum may be used to afford passive protection to exposed children 10 cc being given subcutaneously to young children and double that amount to older patients. A repetition of the injection at the end of from four to six weeks is suggested should the epidemic outbreak continue in severity for several weeks.

Diffuse Subcortical Sclerosis of Brain—A case of diffuse subcortical sclerosis of the familial type is presented by McKinley clinically and pathologically. The case reports from the recent literature of this and allied conditions are summarized. The confusion of classification and terminology is pointed out.

A simple classification is suggested as follows. The term diffuse subcortical sclerosis is a satisfactory designation for the general group. The subgroups are (1) inflammatory type, (2) familial hereditary type, (3) primary or sporadic type.

New England Journal of Medicine, Boston

204 143 190 (Jan 22) 1931

- Atelectasis C R Metcalf Concord N H—p 143
- Stillbirths and Neonatal Deaths in Boston 1929 H C Stuart Boston—p 149
- *Salyrgan as Diuretic Sixty Cases H B Sprague and A Graybiel Boston—p 154
- Crossed Circulation Experiments W M Farrow Baltimore—p 157
- New Type of Heated Cradle H H Faxon Boston—p 160
- Progress in Diagnosis and Treatment of Syphilis 1929 A W Cheever Boston—p 161

204 191 242 (Jan 29) 1931

- Surgery in Treatment of Peptic Ulcer A J Sullivan New Haven Conn—p 191
- Differential Diagnosis of Subacute Bacterial Heart Disease and Bacterial Disease Case W D Reid Boston—p 198
- Diagnosis of Pregnancy by Aschheim Zondek Test H S Finkel Boston—p 203
- Falling Birth Rate G H Bigelow and A D Hamblen Boston—p 209
- Are Vitamin D and Irradiated Ergosterol Identical? A D Holmes Stoncham—p 211
- Perforation of Intestine by Fibrostone T S Bacon and P G Corlies Springfield—p 214

Mersalyl as a Diuretic Sixty Cases—Sixty cases in which treatment with mersalyl was used are reported by Sprague and Graybiel. Forty six patients had cardiac disease with congestive failure, eight had cirrhosis of the liver, four had cancer and one each had nephrosis and an ovarian cyst. In spite of the fact that one third of these patients were in the terminal stages of chronic disease, diuresis was secured by the use of mersalyl in 80 per cent. This diuresis exceeded twice the fluid intake in 55 per cent of the cases. Toxic effects from mersalyl are very rare and consist of mild renal, gastro intestinal or skin irritation. The only complication of importance in this series was in one patient who had cellulitis of the arm and thrombosis of the vein into which the drug was given. The authors confirm the opinion of other observers that the drug is an active and safe diuretic, of particular value in the treatment of congestive heart failure with edema of ascites from various causes, and of nephrosis. In some cases it may be useful in treating malignant effusions. It should be used early in the therapy of these conditions and not reserved as a drug of last resort. As a diuretic for repeated use it is useful in its freedom from serious toxicity and almost complete absence of gastro intestinal irritation. Its effectiveness can often be increased by combining it with acid salts, such as ammonium chloride or nitrate, or with other diuretics and digitalis.

New Jersey Medical Society Journal, Orange

28 184 (Jan) 1931

- Duodenal Stasis C F Baker Newark—p 1
- What is Wrong with Fracture Situation J F Adams East Orange—p 3
- Relation of Traumatic Surgery to Industry J W Martin Baltimore Md—p 6
- Gastro-Intestinal Disorders in Relation to Defective Gastro-Intestinal Mechanics C G Kerley New York—p 14
- Changes in Human Rickets After Viosterol Therapy J Caffey New York—p 21
- Oddities in Acute Mastoid Disease W L Pannell East Orange—p 22
- Tonsillectomy Under Local Anesthesia R H Fowler New York—p 27
- Advantages of General Anesthesia in Tonsillectomy W Campbell East Orange—p 29
- Obstetric Mortality I C Hartman Cermantown Pa—p 31
- Problems in Medical Ethics H H Bowles Summit—p 35
- Bacteriologic Study of Chronic Infectious Arthritis J W Gray and C H Gowen Newark—p 38

Yale Journal of Biology & Medicine, New Haven

3 107 201 (Dec) 1930

- Relations of Diet to Fat Deposition in Body L B Mendel and W E Anderson New Haven—p 107
- Localized Collapse of Lung by Means of Extrapleural Balloon A W Oughterson and S C Harvey New Haven—p 139
- Disciplines H S Burr New Haven—p 151
- Epiphysitis of Anterior Superior Iliac Spine J T Carmody New Haven—p 159
- Hernia Through Esophageal Opening of Diaphragm Case of Right Sided Hernia W A Laford New Haven—p 165
- Blood Picture of Normal Laboratory Animals Guinea Pig R A Scarborough San Francisco—p 169

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Indian Medical Gazette, Calcutta

100 (Jan) 1931

- *Clinical Studies in Malaria by Cultural and Enumerative Methods
 1. Knowles and B. M. Das Gupta—p. 1
 Diagnosis of Lymphatic Obstruction of Filarial Origin H. W. Acton
 and S. S. Rao—p. 11
 Ra. Guards for Ship's Harwers C. L. Bilderbeck W. O. A. Young,
 and F. H. Otto—p. 17

Malaria—Knowles and Drs Gupta give details of fifteen cases of benign tertian or of malignant tertian malaria admitted to the hospital, and studied by cultural and enumerative methods. In Bengal, few cases of acute primary malarial infection are seen. Most patients when admitted have had the disease for a month or more and show chronic and 'residual' infections only. The series, however, illustrates the tendency of infection with *Plasmodium* var. to produce a chronic disease associated with relapses and, on the other hand the marked tendency to spontaneous cure in infections with *P. falciparum*. The mechanism of spontaneous cure in malaria is probably associated with the production of lysins in the plasma, with phagocytosis of the merozoites by polymorphonuclear and large hyaline leukocytes and with the activity of the reticulo endothelial system. In Bengal *P. falciparum* infections during September appear to be more closely associated with a large output of gametocytes than do infections in July and August. In 'residual' and convalescent cases of malignant tertian malaria the administration of quinine has the paradoxical effect of greatly increasing the number of crescents in the peripheral blood stream. The administration of a total dose of 0.06 Gm. of plasmochin in six days is sufficient to exterminate the gametocytes of *P. falciparum* from the peripheral blood stream. A suggested standard treatment for malaria is outlined. In this 13 Gm. of quinine is administered in solution in ten days, together with alkalis and 0.01 Gm. of plasmochin daily for the last six days of treatment.

Journal of Oriental Medicine, Dairen

14 17 (Jan) 1931

- 14 17 (Jan) 1931
- Biochemical Studies of Hydrocyanic Acid Influence on Blood Catalase
F Kudo—p 1
- Influence of Nucleic Acid Salt on Agglutination of Blood K Matsuo
—p 1
- Metabolism of Potassium Sulphocyanate T Kudo—p 2
- Reproduction of Injected Sulphocyanic Potassium in Aqueous Humor of
Body F Kudo—p 3
- Mechanism of Poreation of Rhodan in Body and Region of Formation
Cells of Liver Forming Rhodan K Sato—p 4
- Colloidal Character of Serum of Four Types Viewed from Iso
Agglutination N Mochizuki—p 5
- Comparative Study of Therapeutic Results of Streptococcus Vaccine and
Cocigen in Erysipelas H Ito and B Sawada—p 6
- Strength of Immune Body in Artery and Vein and Mechanism of
Causing Difference in Strength B Mitsue—p 7

Formation of Rhodan in Body and Region of Formation—Sato describes experiments which proved that the stellate and parenchymal cells of the liver have the function of forming rhodan. The blood of a dog the function of whose liver had been disturbed by sealing of the stellate cells with india ink and by intoxication of the parenchymal cells with carbon tetrachloride and phosphorus and by ligature of the ductus choledochus showed a marked decrease of rhodan after an injection of ethyl cyanide. The stellate and parenchymal cells of the liver of a dog have the function to transform ethyl cyanide into rhodan. A part of the rhodan formed in the liver of a dog is excreted into the bile by means of the stellate and parenchymal cells.

Strength of Immune Body in Artery and Vein—Mitsuse found that there is a substance of complement fixation reactive to the hypoid antigen which is generally used in the Wassermann test, in addition to a specific immune body against cholera bacilli, in the serum of rabbits immunized by cholera bacilli mixed with horse or cow serum. Thus the author tested the difference in the strength of the antibody of the serum in the artery and vein of the animals immunized with the serum. The serum of an artery was slightly more powerful than that of a vein. The immunizing reaction of the serum of a vein was made slightly more powerful by an irrigation of oxygen. The immunizing reaction of an artery was made slightly less

powerful by an irrigation of carbonic acid. Therefore the difference in the action of the immune body of the serum of an immunized animal is due to the difference in the contents of oxygen and carbon dioxide.

Journal of Physiology, London

71 1 120 (Jan) 1951

- Action of Drugs on Vascular and Muscular Factors Controlling Intracranial Pressure J Cole P M Duke Elder and W S Duke Elder—p 1
- Post-hypertensive Mechanism Involved in Liberation of Histamine R C Melnikor and S Lait—p 31
- Induction of Ovulation in Hypophysectomized Rabbit by Administration of Anterior Pituitary Extracts M Hill and A S Parkes—p 36
- Action of Ovulation Inducing Substance of Urine of Pregnancy on Hypophysectomized Rabbit M Hill and A S Parkes—p 40
- Adaptations of Organism to Changes in Oxygen Pressure D B Dill H F Lillard A Folling S A Oberk A M Pappenheimer Jr and J H Talbot—p 47
- Response of Single End Organ B H C Matthews—p 64
- Ultrafiltration in the Kidney—p 111

Journal of State Medicine, London

39 65 124 (Feb.) 1951

- Prevention of Street Accident J A A Pickard —p 60
Prevention of Tuberculosis S L Cummins —p 80
Prevention of Venereal Disease A Mrs Cy —p 89
Care of Blind Child B Purse —p 98

Medical Journal of Australia, Sydney

1 33 66 (Jan 10) 1931

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| *Observations on Lindometrium and Uterine Hemorrhage | M G Sutton |
| — 34 | |
| Intestinal Obstruction Due to Ring Cancer of Rectum | E M Fisher |
| — 47 | |

Endometrium and Uterine Hemorrhage—Sutton believes that an understanding of the function of menstruation must be based on a knowledge of its comparative and its intrinsic physiology together with the histology of the cyclic changes in the ovary and the endometrium. Except in the case of bleeding due to retained products, fibroid polypi and carcinoma of the body, irregular uterine bleeding is extra uterine in origin and often extrapelvic, to the latter class belong the metropathoses. Chronic metritis is an infrequent condition associated with chronic interstitial endometritis, the late result of which is true fibrosis uteri. Paraclimacteric fibrosis is only a relative condition and not inflammatory in origin. So called chronic subinvolution is apparently a misconception; it should be termed the parous uterus. None of these conditions usually cause uterine bleeding. They may aggravate or prolong it. Endometritis does not exist except as a transitory condition in the course of an acute severe extrapelvic infection. Before the menopause the uterus is not an organ to be lightly dispensed with because quite apart from its gestational function, it is lined with a complex and ever changing glandular structure possibly possessing, besides an endocrine function, a function relating to calcium economy in the female organism, on this account, when it is subject to hemorrhage not due to malignant growths or large fibroid, due consideration must be given to such procedures as partial hysterectomy or myomectomy with ovarian conservation and roentgen irradiation of the thyroid, pituitary body and spleen. If these procedures fail, the less ideal destruction of the endometrium by radium or surgical diathermy may be practiced.

Practitioner, London

126-195 288 (Feb) 1951

- Modern Treatment of Syphilis L. W. Harrison —p 193
Clinical Study of Latent Syphilis G. Evans —p 203
Problem of Gonorrhea in General Practice E. R. T. Clarkson —p 211
Relief of Retention K. M. Waller —p 240
Sexual Anomalies and Perversions H. J. Norman —p 251
Place of Roentgen Rays in Treatment of Malignant Disease Cancer of Breast F. Herniman Johnson —p 259
Ambulatory Method for Treatment of Gastric Ulcer N. H. Phipps —p 272
Mistaken for Erysipelas I. C. Hargraves H. C. Eads —p 278

China Medical Journal, Shanghai

45 1 100 (Jan) 1951

- Symposium on Kala Azar E P Struthers S F Bethell W H
Turner L S Morgan J B Wood Sr L N Hill T M Yates
A A McFadyen and H W Y Taylor—p 1
Paragonimiasis in China J I Maxwell—p 4a
Continuous Intravenous Intuition A H Skinner—p 49
Pancreatic Stone P D Chow and H Y Oh—p 54

Annales de l'Institut Pasteur, Paris

45 673 814 (Dec.) 1930

- Forms of Ultravirus Provoking Neurotropic Ectodermatoses C. Levaditi—p. 673
- Passive Immunity Obtained with Type III Pneumococcus L. Cotoni and A. Chambrin—p. 706
- *B.C.G. Vaccination and Vernes' Resorcinol Reaction A. Grysez and A. Breton—p. 727
- *Influence of Injections of B.C.G. on Animals Infected with Virulent Tuberculosis I. Levitan, D. Iokhoff and V. Kosmodemianski—p. 740
- Immunity in Experimental Plague A. Compton—p. 754
- Undulant Fever in Azerbaijan Brucella Maltensis Abortus Group P. Zdrodowski, H. Prehn and B. Volessenski—p. 769

B.C.G. Vaccination and Vernes' Resorcinol Reaction

—By means of experiments on guinea pigs and observations of children Grysez and Breton ascertained that vaccination with B.C.G. does not cause an augmentation of the optic index of the Vernes resorcinol reaction in fact the optic index rarely exceeds 44 in animals inoculated with B.C.G. and remains below 50 in vaccinated children. Since tuberculin and other tests produce the same reaction in persons vaccinated with B.C.G. as in tuberculous patients the Vernes test gives valuable aid in distinguishing between brain complications arising from the vaccination itself and actual symptoms of tuberculous infection.

Injections of B.C.G. in Animals Infected with Virulent Tuberculosis

—Levitan et al. performed a series of experiments on guinea-pigs, rabbits and monkeys in order to observe the effects of vaccination with B.C.G. on animals inoculated experimentally with tubercle bacilli. While the B.C.G. vaccination proved harmless they noted practically no difference between the condition of the vaccinated animals and the nonvaccinated controls. The guinea pigs and rabbits that had been vaccinated generally lived longer and the tuberculous process seemed to take on a fibrous character particularly in the lymph nodes and in the liver. In some of the tuberculous guinea pigs that were vaccinated, apathy and a slight elevation of temperature were noted after inoculation, the rabbits did not present any reaction of this nature the monkeys had chills, poor appetite and apathy for several days.

Bull. et Mem. de la Soc. Med. des Hôpitaux de Paris

(54) 1803 1875 (Dec. 22) 1930

- *Severe and Fatal Accidents Following Administration of Acriflavine Hydrochloride R. Benard and M. Tassin—p. 1804
- *Aqueous Extract of Spleen in Treatment of Pruritus and Eczema P. Chevallier and L. Bloch—p. 1814
- Action of Aqueous Splenic Extract on Eosinophils of Blood P. Chevallier and Z. Ely—p. 1819
- Tuberculosis Treatment with Gold Cerium Ianthanum and Molybdenum C. Flindin, L. Lecoq, Marson and P. I. Thuroloz—p. 1823
- Sorbs of Heavy Metals in Treatment of Syphilis and Tuberculosis M. Renaud—p. 1832
- Case of Postserotherapeutic Radical Neuritis M. Labbe, R. Boulton, F. Azerad and P. Soulie—p. 1840
- *Treatment of Severe Forms of Progressive Chronic Deforming Rheumatism by Parathyroid Extract R. J. Weissenbach, F. Grignon, I. Perles and P. Seidmann—p. 1843
- Case of Multiple Sclerosis Treated by Hemolytic Serotherapy I. Aigoud, J. Lavigne and N. T. Korossios—p. 1854
- Permanent Hypotension, Acrocyanosis and Cardioarterial Aphasia E. Doumer—p. 1865

Accidents Following Administration of Acriflavine Hydrochloride

—Benard and Tassin report a case of prolonged subacute malignant endocarditis in which one injection of 0.2 Gm. of acriflavine hydrochloride produced a condition of acute hepatic insufficiency with manifestations of cutaneous and visceral purpura; the patient died three and a half days later. They also review the literature dealing with the effects of the acriflavine hydrochloride treatment and find that most authors, even though they testify to the innocuousness of this product, cite one or more cases in which dangerous symptoms were observed after the injections: the most common manifestations being nausea, vomiting, chills, jaundice, insomnia, fever, cutaneous reactions and dysphagia. The authors do not recommend discontinuing the use of acriflavine hydrochloride but they feel that the fact that so many different symptoms have resulted from its use in different cases warrants careful attention to the problem in order to ascertain the cause of these reactions which seem to bear no relation to the quality of the medicament or to the size of the dose administered.

Aqueous Extract of Spleen in Treatment of Pruritus and Eczema

—Chevallier and Bloch report several cases that

demonstrate the excellent results they have secured during the past year by using aqueous splenic extract in the treatment of pruritus and eczema. The extract used corresponds to 125 Gm. of fresh wet spleen per cubic centimeter. It is given in subcutaneous injection. At first the authors injected 2 cc. of the extract every two days. Later they gave doses of 4 cc. every two days. The larger doses in some cases cause a slight fever and general feeling of discomfort. The results of the treatment have never been unpleasant however and the fact that neither diet nor local cutaneous treatment is necessary makes the splenic extract treatment an important therapeutic development.

Treatment of Progressive Chronic Deforming Rheumatism by Parathyroid Extract

—Weissenbach et al. report a case of progressive chronic deforming rheumatism in which subcutaneous injections of parathyroid extract were used with good results. They have used this treatment successfully in about ten cases. The immediate results of the treatment, which manifest themselves after the first few injections, consist of articular flexibility, increased facility of movement, and a feeling of well being. The amelioration appears in from twenty to thirty minutes after the injection, lasts for about twelve hours and then disappears. The authors point out that this temporary amelioration which often permits a patient to resume an apparently normal life is similar to the effects of insulin in diabetes. The late and cumulative effects of the injections of parathyroid extract are also noteworthy: continued use of the treatment tends to relieve permanently the stiffness of the joints and to permit greater ease of movement. While the treatment is of course useless in cases of extreme calcareous and deformity, it is valuable in long standing cases like the one reported in which the patients are confined to their beds and almost helpless. The exact mechanism of the therapeutic effects of the parathyroid extract is not yet known. Since the treatment is so simple however and involves no risk if the patient is given careful attention, the authors recommend its use in refractory cases.

Bulletins et Mem. de la Soc. Nat. de Chirurgie, Paris

56 1355 1413 (Dec. 13) 1930

- Pulmonary Abscess: Surgical Treatment Seven Cases R. Fontaine—p. 1356
- *Resection as Means of Avoiding Pulmonary Complications in Gastric Surgery A. Delgémère—p. 1376
- Case of Kohler's Disease in Region of Semilunar Bone P. Masini—p. 1382
- Resection of Knee for White Tumor M. Mautelaire—p. 1386
- Inte Reestablishment of Intestinal Continuity by Invagination After Rectosigmoid Resection G. Tern—p. 1392
- Technic of Continent Cholecystostomy by Invagination B. Desplas and J. Meillere—p. 1395

Resection as Means of Avoiding Pulmonary Complications in Gastric Surgery

—Delgémère reports twenty six cases of gastric surgery in which resection was employed; there was only one death which was caused by an embolism. He also gives the results of ten cases in which a simple gastroenterostomy was used and which resulted in three cases of pulmonary complications, two of which were fatal. The author attributes the efficacy of resection in preventing pulmonary complications to the total suppression en masse of the seat of infection.

Paris Medical

1 132 (Jan. 3) 1931

- Tuberculosis: Annual Review P. Tereboullet and M. Telson—p. 1
- *Comparative Value of Mendel's and Pirquet's Tests in Nurslings I. Bernard and M. Lamy—p. 12
- Technic and Indications for Subcutaneous Vaccination with B.C.G. B. Weil Halle—p. 15
- Importance of Determining Presence of Tubercle Bacilli in Gastric Contents in Diagnosis of Pulmonary Tuberculosis in Nurslings P. I. Armand Delille—p. 18
- Prognosis of Tuberculosis in Nurslings M. Telson—p. 20
- Complementary Treatment in Artificial Pneumothorax A. Jacquelin and J. P. Demidont—p. 21
- Evolution of Pulmonary Caverns Revealed Only by Roentgen Examination C. Mantoux—p. 30

Comparative Value of Mendel's and Pirquet's Tests in Nurslings

—Because of the recent attacks made on the reliability of Mendel's intradermo test Bernard and Lamy used both I. and Pirquet's test in the examination of 200 nurslings. The results of the two tests proved to be identical in every case. The intradermo reaction was more pronounced than the cutaneous reaction and in the case of infants who entered the hospital

during the antiallergic period the intradermo reaction usually became positive before the cutiraction. The intradermo reaction is therefore to be recommended for use in critical cases. On the other hand, the greater simplicity of technique of the cutiraction is a distinct advantage. The authors state emphatically, however, that they have not observed any discrepancy between the results of the two methods and that Mendel's test is fully as reliable as Pirquet's.

Presse Medicale, Paris

38 1641 1656 (Dec 3) 1930

*Relations Between Contraction of Aponeurosis of Palm and Hypocalcemia and Parathyroid Insufficiency. R Leriche and A Jung—p 1641
*Osteomyelitis Fractures of Upper Extremity of Femur. A Lambotte—p 1647

Contraction of Aponeurosis of Palm and Hypocalcemia and Parathyroid Insufficiency—Impressed by the rather poorly defined but unmistakable relations that seem to exist between the condition of various ligaments and modifications of calcemia, Leriche and Jung determined the calcium content of the blood in two patients with aponeurotic contraction of the palm. In both patients hypocalcemia was present. Injections of parathyroid extract Collip increased the calcemia, enabled the patient to move his fingers more easily and definitely relieved the contraction of the aponeurosis. In view of the facts already established concerning the role played by the parathyroids in relating the tonus of the muscles, the authors consider the results in these two cases of sufficient significance to suggest that disturbances of parathyroid secretion may be either a possible or a habitual cause of Dupuytren's contraction.

38 1657 1672 (Dec 6) 1930

Anatomy and Pathogenesis of New Variety of Extradural Radiculomedullary Compression. Fibrocartilaginous Nodule of Posterior Face of Intervertebral Disk. T Alajouanine and D Petit Dutilleul—p 1657
*Sodium Chloride Treatment in Intestinal Occlusion Following Laparotomy. A Bojovitch—p 1662

Sodium Chloride Treatment in Intestinal Occlusion Following Laparotomy—Bojovitch reports eight cases in which he used intravenous injections of 5 cc of a 20 per cent solution of sodium chloride to relieve intestinal occlusion following a laparotomy. He has also used this treatment as a preventive measure by giving injections of the solution to laparotomized patients ten hours after the operation and every three hours thereafter until normal emission of gas was produced. The author feels that the excellent results secured, together with the simplicity of the treatment justify an extensive use of the method. The effect of the solution seems due to its excitation of the nerves and the smooth muscle fibers of the intestine.

Archivio di Ostetricia e Ginecologia, Naples

17 691 754 (Dec) 1930

Certain Unusual Indications for Cesarean Section. G Fusco—p 691
Solitary Angiomyomas of Uterus. F Spirito—p 704
*Possible Variation in Iodine Content of Thyroid in Pregnancy and of Fetal Thyroid. G Romaniello—p 716

Unusual Indications for Cesarean Section—Fusco while he admits that his cases are too few to prove anything definitely, is favorable to the view that the indications for cesarean section may well be extended considerably. For the mother, cesarean section may be regarded as not much less favorable than vaginal intervention. For the child, cesarean section is more favorable than the more difficult vaginal operations.

Iodine Content of Thyroid in Pregnancy and of Fetal Thyroid—Romaniello, on the basis of researches carried out on the thyroids of normal and gravid animals and during and immediately following parturition, and also on the thyroids of young just born or several days old, reaches the conclusion that the iodine content of the thyroid increases nearly always in pregnancy, diminishes rapidly during parturition and immediately afterward, and that in the fetal thyroid the iodine does not begin to be found until a few days after birth.

Policlinico, Rome

37 557 604 (Dec 1) 1930 Medical Section

Simple Method of Calculation to Determine the Quantity of Urea That Should be Excreted to Correspond to a Given Amount of Rest Nitrogen in Blood. U Speranza—p 557

Sulphur and Cholesterol. A Ricci—p 561

*Quantitative Variations of Lipoids and Their Relations in Blood in Experimental and Clinical Anemias. S Marino—p 566

The Quantity of Urea Excreted That Corresponds to a Given Amount of Rest Nitrogen in Blood—Speranza explains his method of calculation that enables him to determine more exactly than with the Ambard formula the amount of urea that azotemic kidney patients should eliminate in twenty four hours in relation to a determined amount of rest nitrogen in the blood and what the deficit of renal functioning is in the elimination of nitrogenous catabolites.

Quantitative Variations of Lipoids and Their Relations in Blood in Anemias—Marino states that the results secured in the various cases examined are worthy of note since, not only in experimental anemias induced by means of pyridine and tolylenediamine but also in clinical anemias the quantitative variations in the lipoids and in their relations, as encountered in the blood point to a disturbance sometimes marked, in the lipid equilibrium of the blood. He was unable however to confirm the importance of the relation of the total cholesterol to the phosphatides in researches on anemias, although some authors have emphasized such importance.

37 1737 1772 (Dec 1) 1930 Practical Section

Sodium Citrate in Surgical Practice. M Atella—p 1737
*Serous Meningitis. R Gandolfi—p 1741

Serous Meningitis—Gandolfi describes in detail a case of serous meningitis that had a long course and ended in a clinical recovery but with the grave sequel of total blindness. The author discusses the diagnosis and points out the difficulties that characterized the onset of the disease.

37 1773 1808 (Dec 8) 1930 Practical Section

The Bacteriophage. G Altana—p 1769
*Significance of Pulse During Childbirth. G Picardi—p 1779

Significance of Pulse During Childbirth—Picardi found bile salts constantly present in the urine of puerperants as shown by the Hay test. In some cases the bile salts were present also during the last days of pregnancy, especially at the onset of labor. Urobilin is sometimes present. This involves doubtless a dissociated icterus caused by toxins of probably ovarian origin. The action of the bile salts on the vagus would explain the behavior of the pulse during the puerperium. It is generally recognized that the nature of the pulse offers one of the most important symptoms for the estimation of the way the puerperium is progressing.

37 577 620 (Dec 15) 1930 Surgical Section

General Anesthesia with Nitrous Oxide. L di Natale—p 577
Action of Certain Substances in Ileus Paralyticus. V Ghiron and S Scandurra—p 579
Experimental Researches on Pylorovenous Backflow. V Lozzi and A Vitale—p 588
*Reno-Ureteral Calculosis Associated with Malformation of Upper Urinary Tract. G Scollo—p 605

Reno-Ureteral Calculosis Associated with Malformations of Upper Urinary Tract—Scollo describes an interesting case of reno ureteral calculosis exceptional for the number of calculi found (about 200) in a bifid ureter, with congenital dilatation of one of the two ureteral arms and cystic dilatation of its lower end. He emphasizes the difficulty of the diagnosis of ureteral calculi and the primary congenital condition of the encountered ureteral dilatation, and demonstrates the possibility, in opposition to the opinion generally held that true antiperistaltic movements may develop in the ureter.

Rivista di Clinica Medica, Florence

31 981 1032 (Sept 30) 1930

Pulmonary Gangrene. Pneumothorax Treatment. G Dall'Acqua—p 981
*Oculocardiac Reflex and Artificial Pneumothorax. S Aloisi—p 1006

Oculocardiac Reflex and Artificial Pneumothorax—Aloisi reports a case in which intense bradycardia followed artificial pneumothorax. He explained the behavior of the pulse of other subjects under the same conditions and tested at the same time their oculocardiac reflex. He could find in most cases no relationship between the oculocardiac reflex and the pleurocardiac reflex. Control of the behavior of the pulse following artificial pneumothorax may have however, a certain practical value.

Prensa Medica Argentina, Buenos Aires

17 893 936 (Nov. 30) 1930 Partial Index

- Focal Infection Septic Focus in Tonsil M. R. Caster—p. 893
 Lymphoid Tissue Formations in Mucosa of Uterus Case J. Llambrias and D. Iraeta—p. 916
 *Syndrome of Intracranial Hypertension of Syphilitic Origin E. A. Beretervide and E. Delfino—p. 918

Intracranial Hypertension of Syphilitic Origin —

Beretervide and Delfino report the case of a boy, aged 13 years, with congenital syphilis who after an attack of influenza, followed by otitis presented a clinical picture of about a month's duration, constituted by fever, intense cephalalgia, nausea, pain in the neck and motor, sensory and visual disturbances, which proved to be caused by intracranial hypertension. There was no cerebral tumor responsible for the intracranial hypertension, which proved to have a syphilitic etiology. Syphilis may attack the nervous system in a gummatous, cystic, meningeal or pseudotumoral form. As the meningeal form was excluded in this case by the negative results of the chemical and biologic tests any one of the other three forms of syphilis may have caused the condition of the patient. He received nine intramuscular injections of mercuric cyanide. The injections were given, one every other day. The patient recovered and when seen five months later he was still in normal condition. In a review of the literature published during the last six years, the authors found only one case with the same clinical picture and the same characteristics of the cerebrospinal fluid as those observed in their patient. The patient of the previously reported case received antisyphilitic treatment. As the cerebrospinal fluid showed no modifications, the antisyphilitic treatment was discontinued and high voltage roentgen therapy was resorted to. The authors believe that in that case the recovery was credited erroneously to high voltage roentgen therapy. They consider that the intracranial hypertension in both cases (in the case previously reported in the literature and in their case) improved until recovery under the effect of the antisyphilitic treatment.

Revista de la Soc. de Med. Interna, etc., Buenos Aires

6 431 587 (Oct. Nov.) 1930 Partial Index

- *Chronic Ulcerative Colitis of Gastric Origin J. Beretervide and C. T. Carrega Casaffouth—p. 469

Chronic Ulcerative Colitis of Gastric Origin—Beretervide and Carrega Casaffouth say that, in cases of chronic ulcerative colitis in which the studies made at the laboratory give negative results for infection or parasitism of the patient and in which no toxic factors such as uremia, gout or diabetes are involved, the most probable etiologic factor is the insufficiency of the gastric secretion. In cases of that nature a medication directed to improve the gastric secretion in relation to the individual deficiency gives good results. Achylia gastrica is an important factor in the etiology and pathogenesis of chronic ulcerative colitis. The gastric digestion is imperfectly carried out when the gastric juice is lacking in any of its ferments, which condition by itself may cause the gastrogenic diarrhea. The insufficiency of the gastric secretion may also be responsible for many of the symptoms of the clinical picture of patients with chronic ulcerative colitis, by depriving the intestinal flora of the antiseptic and favorable influence that the gastric secretion has on it. The authors report the case of a woman, aged 35, with a grave dysenteric syndrome of chronic ulcerative colitis, which proved to be related to a condition of marked anchlorhydria of the patient. A treatment directed to increase the amount of hydrochloric acid and pepsin in the gastric juice caused the disappearance of the dysenteric syndrome with rapid improvement in the general condition of the patient.**Archiv fur Gynakologie, Berlin**

143 201 476 (Dec. 19) 1930

- Mouse Test in Evaluation of Solutions of Ovarian Hormone R. Mejer and H. Wulk—p. 201
 Genesis of Vaginal Leukorrhea E. Raab—p. 220
 *Calcium Content of Blood Serum During Pregnancy Labor and Puerperium M. Adler—p. 236
 *Potassium and Calcium Contents of Blood During Menstrual Cycle R. Spiegler—p. 248
 *Modification of Alkali Reserve of Blood by Pregnancy Labor and Puerperium J. Malfatti and J. Bartscher—p. 272
 *Antiglycogen Substance in Blood of Gravida K. J. Anselmino and F. Hoffmann—p. 310
 Iodine Content of Blood in Women Under Physiologic Conditions W. Scheringer—p. 319

- Modification of Metamorphosis of Frog Larvae by Blood from Gravida H. Eufinger, H. Wiesbrider and N. Smilovits—p. 338
 Xanthoprotein Reaction (Becher) in Gravida's Blood from Which Protein Has Been Removed H. Eufinger—p. 366
 Immunizing Action of Parenterally Administered Colloidal Sulphur in Gynecologic Infections G. J. Pfalz—p. 376
 Carbohydrate Metabolism in Cancer of Uterus Following Roentgen and Radium Irradiation I. Lucas—p. 389
 Cerebrospinal Fluid of Women in Health and Disease Sodium Chloride Content E. Vogt—p. 430
 Id. Hydrogen Ion Concentration E. Vogt—p. 434
 Apparent Contradictions Between Clinical and Roentgen Examinations of Pelvis T. A. Wahl—p. 438
 Artificial Pregnancy Reaction in Nonpregnant Woman K. Ehrhardt—p. 446
 Nonspecificity of Manoilov's Pregnancy Reaction F. Fretwurst and K. Otto—p. 459
 Microscopic Changes in Pancreas in Nursing with Diabetes G. Schretter and H. Nevinny—p. 465

Calcium Content of Blood Serum During Pregnancy

—Using the method of Kramer Tisdall, Adler determined the calcium content of the blood serum of fourteen healthy nonpregnant women, twenty-six healthy gravidas during the various months of pregnancy, five women during labor and twelve during the puerperium. It was found that during pregnancy the calcium content of the blood serum is below normal and that the decrease appears as early as the third month from the fifth to the ninth months the decrease is uniform. During the tenth month of pregnancy the calcium content of the blood serum is slightly greater than during the preceding month but is still below the normal amount. During labor it increases rapidly to within the lower limits of physiologic variability. The amount of the increase is dependent on the duration of the labor pains. In from twenty-four to forty-eight hours post partum the calcium content of the blood drops to below what it was before labor. It remains subnormal until the eighth day post partum and then rapidly returns to the lower limit of normal.

Potassium and Calcium Contents of Blood During Menstrual Cycle—Spiegler determined the potassium and calcium contents of the blood in fifty women shortly before the appearance of menstruation, seventy-one during menstruation and eighty-three shortly after its completion. He noted that during the menstrual cycle the potassium content of the blood undergoes a marked alteration. As a rule, it reaches its lowest value during menstruation and then increases progressively in the postmenstrual period to reach its maximum in the premenstrum. The calcium content of the blood serum, on the other hand, is extremely stable and does not show noteworthy changes during the menstrual cycle. The opposite behavior of the potassium and calcium ions results in a marked change in the potassium-calcium ratio.

Modification of Alkali Reserve of Blood by Pregnancy

—According to Malfatti and Bartscher, the decrease in the alkali reserve of the blood that occurs in pregnancy becomes more marked during labor. The decrease is greater in primiparas than in multiparas. During the first three or four days post partum the alkali reserve of the blood increases but it does not reach the normal value. Lactation modifies the carbon dioxide combining power of the blood. This modification is manifested by a decrease in the alkali reserve if the blood is withdrawn at least more than twelve hours after the beginning of lactation, if the blood is withdrawn before this time, the decrease cannot be demonstrated. After the decrease in the alkali reserve of the blood which is produced by lactation, there occurs another increase in the carbon dioxide combining power even from twelve to twenty-one days post partum the value has not returned to normal. Septic conditions cause a particularly marked decrease in the alkali reserve. In a case of vomiting of pregnancy and a case of nephropathia gravidarum with a high albumin content of the urine the alkali reserve was decreased below the normal for healthy gravidas.

Antiglycogen Substance in Blood of Gravida —Anselmino and Hoffmann demonstrated in the blood of gravidas a substance possessing the power of decreasing the glycogen content of a mouse's liver. It is present beginning with the second month of pregnancy and increases in concentration during the course of the pregnancy, beginning on the second day post partum its concentration decreases and by the eighth day it has disappeared completely. Its concentration is much less in the fetal blood than in the maternal blood. Two and five tenths cubic centimeters of blood serum from a gravida at the end of

pregnancy produces a decrease of as much as 75 per cent in the glycogen content of a mouse's liver. The substance was identified as thyroid hormone and in its action on the glycogen content of a mouse's liver 25 cc of it corresponded to from 40 to 50 γ of thyroxine.

Beitrage zur Klinik der Tuberkulose, Berlin

76 1128 (Nov. 22) 1930

- Pneumothorax Adhesions Histology I. Frinz—p. 1
Indications for and Evaluation of Separation by Means of Thoracoscopy and Cauterization G. Maurer—p. 9
Curability of Acute General Miliary Tuberculosis in Nurslings M. Zarfi—p. 68
Possibilities of Error in Roentgen Diagnosis of Diseases of Lungs and Pleura C. Kremser—p. 79
Intratracheal Injection of Iodized Poppy Seed Oil Complications S. Erlansson—p. 105
Influence of Mouth Breathing and Spirography on Pulmonary Ventilation H. Read—p. 121

Curability of Miliary Tuberculosis in Nurslings—Zarfi discusses the high mortality of tuberculosis in nurslings and the particularly unfavorable prognosis of early infection with early generalization of the process. He reports a case of this condition in an infant who was infected with tuberculosis in the first month of life. At the end of the third month tuberculosis of the bronchial lymph nodes was present and by the eighth month there was present an acute general miliary tuberculosis of the pulmonary type with characteristic roentgen changes. The patient recovered both clinically and roentgenologically and two and one-half years later roentgen examination of the lungs revealed only numerous small areas of calcification. Four years have elapsed since the generalization of the tuberculosis. The case is reported as the first instance of recovery of a nursing from acute general miliary tuberculosis.

Sources of Error in Roentgen Diagnosis of Diseases of Lungs—Kremser gives several case histories illustrated with twenty-nine roentgenograms to show some of the common sources of error in the roentgen diagnosis of diseases of the lungs and pleura. The great difficulty in the roentgen diagnosis of diseases of the chest is caused by the fact that the most varied pathologic processes produce the same or similar changes in the roentgenogram. As a result it is frequently impossible to make a definite diagnosis on the basis of only the roentgen examination.

Influence of Mouth Breathing on Pulmonary Ventilation—Read studied thoracographically the influence of forced mouth breathing on the movement of the thoracic wall and demonstrated that a short "transitional reaction" was followed by a reappearance of the rest respiration. Determinations of the carbon dioxide content of the expired alveolar air during and after the mouth breathing revealed that a 'respiratory insufficiency' was not produced by breathing through the mouth. Respiratory experiments with the Knipping apparatus revealed that in most persons there does not occur an appreciable change in the expired alveolar air and in the pulmonary ventilation. In 25 per cent of the cases the carbon dioxide content was increased. Emphasis is laid on the importance of a regular control of the expired alveolar air before and after each experiment.

Deutsche medizinische Wochenschrift, Berlin

56 2205 2228 (Dec. 26) 1930

- Hypertonia of Arteries J. Pal—p. 2205
Clinical and Experimental Investigations on Vaccination Encephalitis A. Eckstein, H. Herzberg, Kremmer and K. Herzberg—p. 2208
Experimental and Clinical Studies on Cryptorchidism H. F. O. Haber—p. 2210
Moro's Apple Diet in Treatment of Diarrheal Conditions S. Wolff—p. 2211
Influence of Malaria on Resistance of Organism in Tuberculosis H. Heinemann—p. 2213
Acid Therapy of Urologic Diseases W. Grossmann—p. 2214

Investigations on Vaccination Encephalitis—Eckstein et al. report the clinical observations on eighty-six children, aged between 4 and 20 months, who were vaccinated for the first time. They started the vaccinations with four different lymphs, which they had obtained from the vaccine institutions in Berlin, Cologne, Eiberfeld and Dresden, respectively. Twenty-two children were vaccinated with animal lymph and the others were vaccinated with humanized lymph. The pustule formation was

typical even after the lymph had made thirty-six human passages. The fever was milder and of shorter duration in the children who had been vaccinated with humanized lymph than in those who had been vaccinated with animal lymph. However, it would be wrong to infer from this that the immunity produced by humanized lymph is inferior to that produced by animal lymph. This problem the authors intend to investigate by revaccination in later years. Herzberg, Kremmer and Herzberg investigated the pathogenesis of postvaccinal encephalitis by comparing the presence of the vaccine virus in the organism of children with a normal course of vaccination with the occurrence of the virus in children who showed disturbances during the course of vaccination. The results of these tests indicate that the vaccine virus is a causal factor in postvaccinal encephalitis. Accordingly, it seems reasonable to employ human vaccine immune serum for the treatment of postvaccinal encephalitis. The authors further report investigations on the titer of humanized lymph. A decrease in the titer could not be observed even after thirty-six human passages.

Moro's Apple Diet in Treatment of Diarrheal Conditions—Wolff discusses Moro's apple diet, which Moro described in the *Klinische Wochenschrift* (8 2414 [Dec. 24] 1929, abstr. THE JOURNAL, March 1 1930, p. 673). Following a review of the history, Wolff describes the technique of this treatment. He gives special advice for the transitional diet. In all he employed the apple diet in 150 cases. Favorable results were obtained in acute dyspepsia, in dysentery, in chronic dyspepsia and in mucous enteritis. The author describes the clinical histories of three especially severe cases, which proved the great value of the method. Occasionally the diet has to be continued for four days instead of the usual two days. The author asserts that if the diet is properly individualized the results are completely satisfactory.

Klinische Wochenschrift, Berlin

9 2329 2376 (Dec. 13) 1930 Partial Index

- Disturbances in Sleep-Wake Mechanism as Symptom of Organic Disease of Brain H. Pette—p. 2329
Therapeutic Experiments in Short Electric Wave Field E. Schliephake—p. 2333
Cholesterol and Lecithin in Water and Acid-Base Balances R. Degkwitz—p. 2336
Hyperinsulinism with Hypoglycemic Syndrome F. Krause—p. 2346
Two Forms of Renal Insufficiency: Circulatory Insufficiency and Insufficiency of Uriferous Tubules E. Becher—p. 2350
New Method for Quantitative Determination of Glycuronic Acid in Urine J. Sauer—p. 2350
Quantitative Determination of Glycuronic Acid in Urine as Test of Liver Function J. Sauer—p. 2351
Albumin Content of Urine in Persons Without Renal Disturbances B. Minz—p. 2352
Method for Determination of Iopax in Urine K. Hillgruber—p. 23 3

Albumin Content of Urine in Persons Without Renal Disturbances—The lack of a method by which it is possible to determine the presence of minute quantities of albumin in the urine was, according to Minz, the main reason why it could not be definitely decided whether the urine of normal persons contains albumin or not. The gravimetric methods do not reveal minor quantities. The author therefore employed the nephelometric method, and in order to obtain correct results he prepared a special standard solution. The tests were performed with the aid of an apparatus which is a combination of a colorimeter and a nephelometer. The technique is described in detail. In testing the urines of 100 persons the author did not detect a single one in which albumin was entirely absent. In normal persons the amount eliminated in the urine varied between 0.2 and 0.6 mg. per hundred cubic centimeters. If the average daily quantity of urine is taken as 1500 cc, the quantity of albumin which is daily eliminated with the urine would be from 3 to 9 mg. That the albumin concentration in the urine is not influenced by consumption of large quantities of albumin was demonstrated by the fact that it was not increased after ten boiled eggs had been eaten. The albumin concentration remains the same in the course of a day and some times even during several weeks. However, a tubular report shows that there are considerable differences in the albumin content of the urine during various diseases. In persons with inflammatory conditions the values are usually high. The increased albumin content in hypertension is probably due to a beginning nephrosclerosis. The high values in diabetes

bring to mind the frequent concurrence of renal disorders. It has been repeatedly pointed out that albuminuria is not always a sign of a beginning renal disturbance. However, the author thinks that in diseases which frequently lead to renal disorder a quantitative determination of the albumin in the urine would often make possible an early and effective prophylaxis.

9 2377 2424 (Dec 20) 1930

Forms of Circulatory Weakness C Kroetz—p 2377

*Prophylaxis of Acute Anterior Poliomyelitis E Moro—p 2383

Theory of Mechanism of Diuresis H Marx—p 2384

Relation Between Nephrosis and Glycosuria H Strauss—p 2388

Jaensch and Muller's Interpretation of Results of Capillaroscopy in Imbeciles G Knittel—p 2389

Circulatory Minute Volume in Persons with Circulatory Insufficiency C Ernst and R Weiss—p 2393

Percutaneous Immunization by Means of Loewenstein's Diphtheria Ointment H Baar and H Benedict—p 2395

Relation Between Growth and Cardiac Disturbances W Gottstein—p 2396

Encephalitic Cerebral Disturbances in So-Called Exsiccosis M Goldzieher—p 2399

Blood Group Statistics W Weinberg—p 2400

Idem P Hertwig—p 2400

Prophylaxis of Acute Anterior Poliomyelitis—Moro asserts that the observations of numerous investigators have proved that the serum of convalescents has virucidal powers against acute anterior poliomyelitis and that the blood of most adults has the same power. The virucidal action of the blood is mainly due to the presence of specific antibodies. In the therapy, however, the injection of blood from convalescents or from adults has not been effective. This failure is probably due to the fact that the injection is generally given too late. The therapeutic effects were more favorable when the injections were given during the preparalytic stage. However, since it is generally difficult to estimate the disease correctly during the beginning stage, the therapeutic value of injections of blood from convalescents or from adults is minimal. The author, however, recommends injections of blood from adults (convalescent blood is rarely obtainable) for prophylactic purposes. By this method he hopes to prevent epidemics of acute anterior poliomyelitis. Because the children of less than 5 years of age are mainly endangered, they should be given an injection of 20 cc of fresh blood from one of their parents. He thinks that this procedure would give protection for a period of four weeks. If necessary, the injection would have to be repeated at the end of that period. In large cities nearly all adults over 15 years of age have specific protective substances in their blood, and the injection from one adult usually gives sufficient protection. In rural districts, however, only about 50 per cent of adults possess specific antibodies and here it would be necessary to inject mixed blood (from both parents), or serum from adults living in the city could be used.

Medizinische Klinik, Berlin

26 1881 1916 (Dec 19) 1930

Operative Treatment of Chronic Inflammation of Adnexa Siebert—p 1881

Active Immunization Against Diphtheria with Subneutral Mixtures R Otto and G Blumenthal—p 1886

*New Method for Roentgen Demonstration of Liver and Spleen P Radt—p 1888

Anticlutins as Source of Error in Pirquet's Reaction E Hohe—p 1891

Spontaneous Perforation of Ureteral Calculi K Lion—p 1892

Newer Results of Experimental Acid Injuries and Their Evaluation in Diabetes and in Muscular Rheumatism A Slauck—p 1896

New Method for Roentgen Demonstration of Liver and Spleen—Radt describes a method which makes it possible to show the liver and spleen as dense shadows in the roentgenogram. The hypothesis on which he bases his method is the following: Certain colloidal substances when parenterally administered become deposited as small granules in the reticulo-endothelial system. Thus spleen and liver become permeated with finest granules. The author reasoned that if a colloid would be used which is impermeable for roentgen rays its deposits in the liver and spleen would produce a more dense shadow in the roentgenogram. Moreover he reasoned that those parts of the liver and spleen (either tissues or fluids) which do not have the capacity to deposit the colloid would be permeable for roentgen rays and the roentgenogram would show differences against the other organ tissues. It could therefore be expected that the method would not only reveal the shape and size of the

liver and spleen but would also show changes within the organ, especially in those cases in which as a result of proliferation the connective tissue had encroached on the parenchymal cells. With the help of this method the author could diagnose a cirrhosis of liver and several times he detected cancerous nodules within the liver. He thinks that it might also be possible to detect abscesses, echinococcus cysts or hemangioma in the liver or spleen. The contrast colloid that was found most satisfactory is a thorium dioxide solution of a certain dispersion, which has been so stabilized by carbohydrates that no body fluid will cause flocculation. The injection is given intravenously. In human beings, from 40 to 80 cc is required. However, this quantity is not injected at once but rather in daily divided doses of from 10 to 20 cc. The injections were never followed by serious complications. Only in a few cases were temporary discomfort, chills and increased temperature noted, but they disappeared quickly. Control of the blood picture revealed a temporary leukocytosis and a slight, likewise only temporary, decrease in the hemoglobin content. Chemical examinations of the blood and urine did not reveal abnormalities. The author made numerous experiments on animals and employed the method on twenty patients. He shows several roentgenograms of patients and comes to the conclusion that this method represents an advance in the diagnosis of disturbances of the liver and the spleen.

Munchener medizinische Wochenschrift, Munich

77 2215 2230 (Dec 26) 1930

Gold Therapy of Chronic Polyarthritis W Fehlow—p 2215

Difficult Dentition M Hohlfeld—p 2217

*Galactorrhea Continuing Several Months After Death of Child F Ronnefeldt—p 2218

Treatment of Angina Pectoris H Mezger—p 2219

Galactorrhea After Death of Child—Ronnefeldt reports the case of a woman, aged 18, a native of Liberia (Africa). Six months previously she had given birth to her first child, but it had died four days after birth. Since the death of the child, the milk secretion had not ceased. The woman did not have pains but the breasts were always full, and milk was continually discharging in drops from both of them. The patient was given three times daily 15 drops of spirit of camphor, and after three days the milk secretion ceased.

Wiener klinische Wochenschrift, Vienna

43 1589 1620 (Dec 25) 1930

*Role of Liver in Decompensation of Heart E Zak—p 1589

Biologic Action of Ultrashort Waves S Jellinek—p 1594

*Newer Methods for Treatment of Bone Fractures L Bohler—p 1596

Experimental Foundations of Stomach Therapy in Abnormal Hematologic Conditions K Singer—p 1597

Studies on Significance of Placenta W Ortlösch—p 1600

Various Forms of Vomiting in Children H Mautner—p 1603

Rôle of Liver in Decompensation of Heart—In the first part of the article Zak shows how some parts of the skin are influenced by certain dysfunctions of the liver. With the development of an engorged liver during decompensated circulation, the water depots of the skin become filled. Thus the venous part of the circulation becomes disburdened. The increased avidity of the tissues for water has the effect that the external elimination, namely, perspiration, is reduced, and that is why the surface of the skin is usually dry while the tissues contain large quantities of fluids. Experiments proved the correctness of the clinical observations, and the author concludes that in chronic engorgement of the liver in patients with heart disease there exists a disturbance of the normal relation between the liver and the water content of the tissues.

Newer Methods for Treatment of Bone Fractures—Reduction and fixation are, according to Bohler, the most important factors in the treatment of bone fractures. The reduction is usually accomplished without great difficulty, but the fixation is often difficult. In fractures of the shaft of the forearm in which it is extremely difficult to prevent displacement of the fragments, the author advises that rust-free wires be passed through the bones and then that a plaster-of-paris cast be applied. After the cast has become hardened the ends of the wires are fastened by means of set-screws, which in turn are fastened by a plaster-of-paris bandage. In fractures of the os calcis both reduction and fixation are difficult. Because manual reduction is not possible, a nail is put through the tuber calcanei and a

second one through the tibia, and the fracture is reduced by means of the screw traction apparatus. Then a plaster-of-paris cast is applied. The nails are not removed immediately but remain for from four to five weeks. Medial and intracapsular fractures of the neck of the femur may be treated either by the application of a plaster of paris cast or surgically. In pseudarthrosis of the neck of the femur the author recommends subtrochanteric osteotomy. Beck's method of bone boring he recommends in pseudarthrosis in the shaft of long tubular bones.

Zeitschrift fur Kinderheilkunde, Berlin

50 381 508 (Dec 30) 1930

- Pathogenesis of Craniotabes H. Abels—p. 381
*Endocrinopathies in Children M. S. Massloff—p. 431
Congenital Cystic Malformations of Lungs in Nurslings Diagnosis C. Hunermann and H. Sievers—p. 451
Arterial Hypertension and Allergy A. S. Sokolow—p. 461
*Nutritive and Growth Values of Zwieback I. Abelm—p. 465
Physiology of Digestion in Nurslings O. Budde—p. 482
*Chlorine Content of Blood in Scarlet Fever and Diphtheria A. A. Markowa—p. 496
Feet Disease and Calciuria R. Glauber—p. 503
Preallergic Period of Tuberculosis J. Lisner—p. 505

Endocrinopathies in Children—According to Massloff, endocrinopathies constitute 44 per cent of all the diseases of children. In early infancy they are characterized principally by growth disturbances and manifestations of spasmodophilia, later, disturbances in the metabolism of fat, water and sugar become of increasing importance. The part played by constitutional predisposition in the development of endocrine disturbances and in the peculiarities of the clinical picture is undisputed. Another important part in the development of various forms of growth and metabolic disturbances in children is played by the central and sympathetic nervous systems. In addition to the purely endocrine disturbances in the growth and metabolism there undoubtedly exist purely dystrophic disturbances. In the investigation of endocrinopathies in children, in the making of a prognosis and in the outlining of the treatment the constitutional factor should be given more consideration than it receives at the present time. Of great importance in the differential diagnosis of the various endocrinopathies are the determination of various indexes and the plotting of the anthropometric curve.

Nutritive and Growth Values of Zwieback—In feeding experiments on rats, Abelm demonstrated that the toasting process which zwieback undergoes after it is baked greatly decreases its growth value. The proteins of flour are poor in several biologically important amino-acids and diamino acids. Some of the growth producing amino-acids, as lysine, are destroyed by the baking and the subsequent heating. This was proved by the fact that the oral administration of extremely small quantities of lysine (20 mg. a day) increased the rate of growth of rats on an exclusive zwieback diet. When the administration of lysine was discontinued, the growth of the animals was arrested. Lysine added to the zwieback dough and then subjected to the baking and toasting process did not prevent the arrest of growth. That the harmful factor is the toasting process rather than the baking was shown by the much better growth of animals on a diet of baked but untoasted zwieback than on a diet of regular zwieback. This modification of the biologically important protein components is more important than the vitamin deficiency. Despite the daily administration of 1 cc. of fresh brewery yeast, of lecithin or of from 2 to 5 cc. of milk, the rats on the zwieback diet did not show a satisfactory increase in weight. The substances with a high vitamin content, as butter and whole milk, which are frequently used in making zwieback, do not give to the finished product a sufficient growth producing action. In young rats that are kept on an exclusive bread zwieback diet there occurs an extensive falling out of the hair. The addition of a minute quantity of dried thyroid substance to the diet arrests the alopecia and stimulates the growth of the hair.

Chlorine in Blood in Scarlet Fever and Diphtheria—In determinations of the chlorine content of the blood in sixty-two cases of scarlet fever and diphtheria, Markowa found that in the early stage of both of these diseases the amount of chlorine in the blood is below normal. The degree of the diminution is directly dependent on the severity of the disease. The cause of

the subnormal chlorine content of the blood in the early stage of scarlet fever and diphtheria is the specific infection and not the accompanying complications.

Zeitschrift fur Krebsforschung, Berlin

33 189 319 (Dec 22) 1930

- Action of Material Free from Tumor Cells and Material Containing Tumor Cells on Liver, Spleen and Kidneys of Animals R. Erdmann—p. 189
*Skin Cancer Production by Prolonged Ultraviolet Irradiation W. Putschar and I. Holtz—p. 219
Immunity to Tumors: Immunizing Power of Homologous Muscle Autolysate I. Costero—p. 261
Occurrence of Tumor Cells in Circulating Blood of Animals with Inoculation Tumors P. Jonescu—p. 264
Factors Concerned in Etiology and Treatment of Tumors H. Auler—p. 281
Relation Between Suprarenals and Growth of Tumors H. Auler and W. Rubenow—p. 292
*Influence of Sympathetic Nervous System and Nutrition on Development of Experimental Tumors M. Eiger and E. Czarnecki—p. 296
Incidence of Cancer A. M. Merkow—p. 302

Skin Cancer Production by Prolonged Ultraviolet Irradiation—Putschar and Holtz chose rats instead of mice for their experiments because of the fact that whereas the spontaneous development of cancer is relatively frequent in white mice it is extremely rare in rats. A strain of rats was used in 10,000 of which over a period of three years not a single spontaneous skin tumor was observed. It was found that cancer of the ear could be produced with great regularity without the aid of chemical agents by prolonged ultraviolet irradiation. The carcinomas appeared at the earliest after twenty-seven weeks of continuous irradiation. By the end of the thirty-seventh week, all the six animals had cancer. A definite relation between the color of the skin and the susceptibility to cancer was not demonstrated. The administration of viosterol changed neither the susceptibility to tumors nor their rate of growth. Changes in the elastic tissue in the skin were of a purely retrogressive nature; they did not show any relation to the development of cancer but were a manifestation of chronic ultraviolet ray dermatitis. The specific action of the ultraviolet rays consisted in the production of a periodic regeneration of the hair with a marked increase in the number of lanugo hairs and the development of giant hairs. The authors believe that there exist close histologic relations between ultraviolet ray cancer and the precancerous light dermatoses that occur in man. The experiments prove the etiologic role of ultraviolet rays in cancer of the skin in human beings.

Influence of Sympathetic Nervous System on Development of Experimental Tumors—In experiments on rabbits, Eiger and Czarnecki demonstrated that the sympathetic nervous system has a positive, inhibitory influence on the development of tar epitheliomas. The nutrition also is of importance in rabbits kept on a diet of oats, the development of tar epithelioma is accelerated. The experiments confirm the correctness of the contention of some investigators who consider it necessary to emphasize the importance of precancer.

Zentralblatt fur Gynakologie, Leipzig

54 3265 3337 (Dec 27) 1930

- Genu Recurvatum Congenitum F. A. Wahl—p. 3265
*Rational Salicyltherapy in Leukorrhea H. Schmidt—p. 3269

Rational Salicyltherapy in Leukorrhea—Schmidt points out that in recent years salicylic acid has been employed in the treatment of leukorrhea. In some cases, however, it has been used in too high concentrations (125 per cent) and the result was that occasionally exacerbations were observed, and many patients complained of burning pain in the vagina. In order to eliminate these disadvantages salicylic acid was used in a 1 or in a 4 per cent solution. It is administered by means of glycerin suppositories, which are introduced into the posterior vault of the vagina. They are melted by the body temperature and the effective substance becomes evenly divided and comes in contact with all diseased portions. The use of glycerin is especially advantageous because of its hygroscopic power, which effects a withdrawal of the cell fluids, so that now, as a result of a reversal of the osmotic pressure a resorption of the salicylic acid becomes possible. Before the use of the glycerin suppositories the effective medicament was frequently discharged again before it became effective. In order to increase the action of

the salicylic acid the author dries the vaginal mucous membrane by means of small compresses before introducing the suppository. If this is done, the hygroscopic power of the glycerin can attack the cells directly, and the 1 per cent solution of salicylic acid is not made ineffective by mixture with the vaginal secretion. For this reason it is advisable that the physician should introduce the suppositories. The author asserts that most cases of nongonorrheal leukorrhea can be effectively counteracted in from eight to twelve days. If the patient introduces the suppositories herself, it is advisable to employ suppositories containing the 4 per cent solution of salicylic acid because the patient does not remove the vaginal secretion. If erosions of the portio vaginalis exist, the 4 per cent solution is likewise advisable. That this treatment has lasting effects is proved by the fact that relapses did not occur, although in some of the patients the treatment was concluded from three to six months previously.

Kazanskiy Meditsinskiy Jurnal, Kazan

26 955 1064 (Oct.) 1930

- *Chemical Study of Manoilov's Reaction B. Khromov—p. 957
- *Influence of Diathermy on Gastric Functioning L. Klyachkin and E. Mogilevsky—p. 963
- Case of Paroxysmal Hemoglobinuria G. Nagibin—p. 969
- Value of Skin Reaction in Typhoid V. Sharovskaya—p. 972
- Surgical Treatment of Incised Wounds in Throat and Larynx I. Tsimkhes—p. 984
- Nine Cases of Resection of Superior Hypogastric Plexus I. Orlov—p. 989
- Classification of Purpura in Children A. Kisel—p. 1012
- Constitution and Psychotherapy G. Gerenshtein—p. 1020

Chemical Study of Manoilov's Reaction—The object of Khromov's researches was to ascertain the influence of hemoglobin on Manoilov's reaction. A 4 per cent solution was prepared with commercial amorphous hemoglobin; then, by adding distilled water to this basal solution a scale of various concentrations was obtained. A dose of 3 cc of a solution was used for the reaction (the third modification method). Only solutions containing more than 1 per cent of hemoglobin proved to influence somewhat the reaction, namely, the coloration pointed then to a female blood. Since solutions containing about 0.5 per cent of hemoglobin are commonly used for Manoilov's reaction, the effect of hemoglobin is not of significance. Evidently hemoglobin does not assume the role of a specific protein. When a higher concentration (more than 1 per cent of hemoglobin) was used, the coloration corresponded to that of female blood instead of that of male blood, as could be expected on account of a larger amount of hemoglobin in the male blood. Thus the hemoglobin acted as a nonspecific protein. Further, it appeared that the results of Manoilov's reaction were correct although identical hemoglobin solutions were used, that is when the difference of hemoglobin contained in the male and female bloods was eliminated. Moreover, blood serum, ascitic fluid, cerebrospinal fluid and urine, which are free from hemoglobin, serve for the reaction. Another series of researches was made with iron protoxides and iron oxides. The basal solution contained 0.558 per cent of iron, it served for the preparation of solutions of lower concentrations. A dose of 3 cc of a solution was used for the reaction. Solutions containing not more than 0.15 per cent of iron proved not to influence appreciably the reaction, with solutions containing more than 0.2 per cent of an iron protoxide, the coloration changed to green or to blue. Obviously there is no connection between the reaction and the amount of iron in the blood, otherwise a solution containing 0.15 per cent of iron would change the coloration to that of the male blood (usually a solution of about 0.0015 per cent of iron is used for the reaction). The results were identical whether a solution of an iron protoxide or of an iron oxide served for the tests. Hence the atomic property of the blood iron is without influence on the reaction.

Influence of Diathermy on Activity of Stomach—The observations of Klyachkin and Mogilevsky were made on forty-two patients with various dyspeptic disturbances. A combined chromoscopic and fractional method was used for exploration of the gastric secretion. The gastric contents were removed while the person was fasting and immediately afterward 2 cc of a 1 per cent aqueous solution of neutral red was injected intramuscularly. Evacuation of the stomach was repeated with the

person fasting, twice at a ten minute interval, and the gastric juice secreted within thirty minutes was examined. Then a caffeine test meal (Ratsch and Kalk) was introduced with a catheter, and the gastric contents were withdrawn every fifteen minutes for about two and a half hours. For determination of the gastric motility, phenolphthalein was added to the test meal. The same procedure of exploration was repeated after the diathermy treatment. One electrode, of from 100 to 150 sq cm was applied to the gastric region, and another electrode, of from 150 to 200 sq cm, was parallelly applied to the back. A current of from 1 to 15 amperes was used, the duration of each sitting was half an hour. Repeated examinations after the treatment were made on twenty-five patients. There were no changes of gastric secretion in three of six patients with hyperacidity. In one the gastric juice secreted during fasting was reduced by 40 cc. In two, the decrease of the gastric juice was by 82 cc, besides, elimination of the neutral red appeared prolonged by three minutes (from nine to twelve minutes) after fifteen sittings of diathermy. In five of seven patients with a normal gastric acidity, the diathermy treatment proved to be without action on the gastric secretion and motility. In one instance the secretion of the gastric juice increased by 64 cc., elimination of the neutral red occurred in twelve instead of eighteen minutes. In another patient the gastric acidity was notably decreased. In two of three patients with hypo-acidity the gastric juice remained unchanged, in the third there was an increase of the gastric acidity and of the gastric secretion (by 54 cc.) and an accelerated elimination of the neutral red. In nine patients free hydrochloric acid was absent and the gastric secretion was notably reduced. In five of them elimination of the neutral red did not occur. In only two cases in which elimination of the neutral red was not entirely abolished did the diathermy treatment result in the appearance of free hydrochloric acid and in an increase of the gastric secretion. In the remainder, no changes were observed after fifteen sittings. These cases of achylia presented a group of 'complete and true anacidity' in which the lesions of the gastric parenchyma were severe. The authors conclude that, in cases of gastric hyperacidity, diathermy treatment is followed by an improvement of the subjective as well as the objective signs. In cases of organic achylia, the treatment had no influence on the gastric secretion but it induced improvement of the general condition and caused the disappearance of subjective signs which had previously resisted various remedies and diets. Therefore diathermy is recommended for patients with dyspeptic manifestations, regardless of the condition of the gastric acidity.

Finska Lakaresallskapetets Handlingar, Helsingfors

72 859 953 (Nov.) 1930

- Study of Typhoid Epidemics in Finland During Famine R. Sievers—p. 859
- *Treatment of Colicpvelitis with Bacteriophages C. Nyberg—p. 926
- *Benign Tumors in Striated Muscle G. Tallqvist—p. 934

Treatment of Colicpvelitis with Bacteriophages—Nyberg reports three cases of acute colicpvelitis treated with bacteriophages with good results. He says that in chronic cases it is difficult to find effective bacteriophages, frequently two or more strains of colon bacilli appear in the urine and each of them requires a special bacteriophage.

Benign Tumors in Striated Muscle—Tallqvist affirms that primary connective tissue tumors of myomatous nature occur in the striated muscles. They are usually fibromyomas, and all transition forms between pure myomas and pure fibromas are found. The tumors are as a rule benign. Four cases are described: a myoma, a fibromyoma, a fibroma and a desmoid tumor.

Ugeskrift for Læger, Copenhagen

92 1171 1190 (Dec. 11) 1930

- Case of Pneumaturia H. Tønnesen—p. 1171

Case of Pneumaturia—Tønnesen's patient was a man, aged 60 with stricture of the urethra and infection of the urinary tract with *Bacterium lactis-aerogenes*. The pneumaturia was due to a small fistulous connection between the intestine and the bladder. Progressive dilation with occasional lavage renders his condition tolerable.

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THE CLINIC AS A CENTER OF GRADUATE STUDY *

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"Things in nature rarely are static, they increase or they decrease, they grow or they decay, they progress or they retrogress. Man's education in many respects resembles things of nature, rarely is it static, when knowledge does not increase, almost always it decreases. Physicians should remember this and make every effort to keep out of the static state and on the side of increase, of growth, of progress.

'Physicians can be divided into two great groups, those that are learning and those that are forgetting, those that each year know more, and those that each year know less. There seems no third group, those that are stationary.

"A few physicians increase in knowledge from within and grow from their own doing. These are the innate investigators. The rank and file require outside help to grow and to progress. Books, meetings, contacts, discussions, teachers are our armamentarium for progress. Like the 'spring tonic' of past days, all of us need some of this medicine, at least annually, better if it comes more frequently. A large majority of physicians know their need and seek treatment." Postgraduate instruction is a potent prescription to this end, if it can be carried to the proper dispenser for filling.

Postgraduate instruction should commence with the physician's graduation from the medical school. It should continue throughout his life. Many varieties of postgraduate instruction should be, and in fact are, available to meet the several needs of medical men.

In my judgment the most potent postgraduate clinical instruction in the early period of the medical man's life is afforded by the internship and residentship in a well organized, efficiently run hospital. The medical school curriculum of today really is planned as a preparation for a hospital service. Already many states demand the hospital 'internship' of the candidate for registration in medicine. Graduates of good medical schools with rare exceptions seek service in a hospital following graduation.

The most important influence of teachers in the clinical branches of medicine is not exerted within the medical school on medical students but within the clinic or hospital on recent graduates in medicine. The

clinician's pupils or disciples are not the huge body of his medical students but the small group of his interns or house officers and his residents. To these he imparts the discipline of his leadership. These he conducts in their learning. In the sense of graduate instruction in a university, the resident group form the clinician's seminar. The clinic chiefs satisfactorily fulfilling this function?

Such a relationship is possible only in a clinic organized with a chief of service giving largely of his time and effort to the conduct of the clinic and at heart a teacher and investigator, in a clinic adequately staffed provided with necessary laboratories capable of more than routine examinations, and peopled by not too many patients. The latter is important. The majority of American hospitals have too many patients in ratio to staff and particularly in ratio to resident staff, for them to be significant centers for graduate study. No hospital will attain to the level of a genuine graduate school in clinical branches of medicine, unless it has enough patients to afford numerous examples of disease of many types and enough members of the resident staff, so that each patient may be studied thoroughly and not too hurriedly by one or several of them.

A distinction needs to be made between the graduate study of a clinical branch of medicine and an apprenticeship in one of them. The latter is more analogous to what is known in medical circles as postgraduate study. That there is such a difference seems largely to be lost sight of at present. In industry an apprentice is one who is gradually trained to become a master workman but is not one that is being fitted to be the developer of an industry. The apprentice is taught to carry out the processes of the trade but in so doing he hardly will rise above the level of the average artisan of the trade.

Hospitals in general can easily make of the intern a safe practitioner of average ability if they train him as an apprentice needs to be trained, to do more requires the leadership of men able far beyond the level of the average practitioner and able in different directions. It is the clinic of the latter type, presided over by the real leader, that is the outstanding need of today.

STANDARDIZATION OF HOSPITALS

Present efforts at hospital standardization have attained to a fairly satisfactory level of mediocrity for hospitals. A few, often perfunctory, changes in past practices of a hospital now will secure for it a class A rating. The very poor hospitals have been forced to improve, and this is the only real good that has resulted from all the work of those organizations which have been concerned in the classificatory rating of hospitals. Many institutions, instead of receiving vigorous stimulation to betterment, are basking in the calm complacency of class-A-dom. Regulations of the classifica-

* Read at the banquet held in connection with the Annual Congress of Medical Education, Medical Licensure and Hospitals, Chicago, Feb. 16, 1931.
1 From Introduction by Henry A. Christian to the proceedings of the 1930 Post Graduate Assembly.

tionists are cheerfully omitted in the case of the best hospitals in the realization, possibly the subconscious realization of the mediocrity of their standards and the probable deterioration that would result in these hospitals from their uniform enforcement.

If there is to be any official standardization of hospitals, new standards should be set. At present far too many hospitals are rated as satisfactory, that is, the class A hospitals, for such a rating to have much value or to be any real stimulus to improvement. We are too much in the condition of a heaven peopled by perfect beings, the angels. Fewer hospitals should be rated class A than at present is the case, in other words, there should be fewer angels.

In my opinion the fundamental standard demanded of the majority of the hospitals should be that the particular hospital in question be a safe place in which to be a patient. For this it is primarily required that the hospital have the usual modern equipment and that every staff member be a well trained practitioner. The latter is far more important than the former. This would mean the demotion from the staff of any physician who, for one reason or another, does not have the attainments that make him quite safe to care for patients in a hospital presumably equipped to carry out modern diagnostic and therapeutic procedures. This is the most difficult requirement of a classification rating to enforce. Perhaps the fact that it is so difficult is the reason it has played so small a part in present standardization regulations, but it is not in impossibility, with certainty it can be brought about in due course of time. A judiciously placed age retirement rule, which every hospital should have will take care, in time, of all present undesirables, better study of candidates to fill vacancies will reduce to a minimum future incompetents. When a hospital has attained such a staff, this should entitle it to a certain high rating.

All hospitals that are safe places to be sick in within the terms just outlined can be considered as satisfactory for an apprenticeship in medicine, i. e. may be rated as being suitable for internship, provided the staff is willing to devote time to the instruction of interns. In this connection, consideration must be given to what the intern receives in the way of training. The staff must be one that makes a serious effort to train interns. This means, among other things, that the staff members spend a considerable time in the actual examination and discussion of the patients. In many hospitals this is not done, and as a result the intern receives but little guidance and finishes his service without having learned very much.

The type of hospital in which it is safe to be sick, if equipped with modern means of diagnosis and treatment, should be rated, let us say, B, with the possibility of becoming A when these requirements are met in a superlative way. For a long time to come there should be many more class B than class A hospitals.

In addition to such B and A hospitals, there should be recognized another type of hospital, a teaching hospital. Such a hospital should, of course, have all that is needed to be a class A hospital, and in addition some of the staff should be teachers in the broad sense of the word as guides in learning. It is by no means necessary that a teaching hospital have any association with a medical school. In fact, numerous hospitals in actual association with medical schools are not what I would regard as teaching hospitals. Any hospital may become a teaching hospital when members of the staff

follow the general methods applied in graduate instruction in university departments of science and literature. In a teaching hospital there should be a resident staff of several grades, interns or house officers, assistant residents and residents. The resident staff forms the student body with interns as apprentices and assistant residents and residents as graduate students, the latter having considerable free time to carry on investigation.

During the apprenticeship period the service may be a mixed one, though in general a mixed service of any sort with less than a two years' duration affords a definitely unsatisfactory apprenticeship leading to graduate instruction, because a shorter service offers too little time to acquire the routine technique of any one subdivision of the service and may result in the interns becoming a slipshod apprentice. In general, present mixed services are unsatisfactory from a pedagogic aspect and not satisfactory as concerns the care of patients.

THE TEACHING HOSPITAL

As in any other scheme of graduate instruction, leadership is far more important than material facilities, and it is in real leadership that our clinics are weakest. In a teaching clinic the leadership of the chief of service looms large in the success of the clinic in graduate instruction. It is exceedingly difficult to specify the criteria essential for such leadership, and if one reviews the lives of men who have had great accomplishments to their credit in these lines, it is obvious that there has been much variation both in their personality and in their methods.

No better examples of this can be cited than in the case of William Osler and William S. Halsted while leaders, respectively, of the medical and surgical clinics of the Johns Hopkins Hospital. If my readers did not know personally these two great leaders of a comparatively recent date, they should read Cushing's *Life of Sir William Osler* and MacCallum's *William Stewart Halsted Surgeon*, to see how entirely different these men were in personality and methods, while each was the head of a noteworthy school of graduate study of clinical branches of medicine. Something of Halsted's point of view is given in a letter to one of his assistants in the following sentences:

In the building up of a school you will have to sacrifice yourself to the interests of the school and of your assistants. This, in itself, is a fine perhaps the finest ambition. And you will be the only one able, even approximately, to estimate the extent of the sacrifice and the effects of the impress of your suggestions and teachings and example. The head of a department in a school should give his problems freely to his assistants (and I have been happy to note that this is your tendency) rather than to technicians and skilled students and assistants, the results of whose work would redound to his glory.

Again Halsted writes:

We wish men who have learned to work for work's sake, who find in it and in the search for truth their greatest reward.

The success of graduate instruction can be judged best by the type and number of the pupils, and their subsequent careers. Former pupils more than any others should influence one in the selection of a leader under whom to seek graduate instruction. "The worth of a professor is measured by the personality of those whom he has trained" (Leriche). My advice to one seeking such an opportunity for graduate instruction in clinical fields would be to study the history of, and, it

possible, to interview former members of the resident staff of a given clinic and to judge of the leadership of the chief from the quality of those that have come under his leadership.

EXTENSIVE VERSUS LIMITED KNOWLEDGE

It would seem an almost necessary qualification that the chief of a teaching clinic should have a broad grasp of the entire field of his clinical endeavor as well as a special knowledge of some particular subdivision of the field. He should be a clinician of wide experience and one steeped in the literature and lore of his domain in medicine. He should be familiar with the methods of investigation and have some accomplishment in investigation to his credit.

In recent years I have been wondering whether much of great significance has not been lost in the trend toward a narrowed devotion to some particular phase of a given general field of medicine. Are we any longer what I would term scholarly or erudite in medicine? The younger leaders in some of the best clinics have specialized in securing their training by an intensive study of some relatively limited field and then clinics are so organized that only this same sort of training is being afforded to their associates. I would not decry such intensive investigation, but I wonder if it would not be wiser to organize the clinic so that each in turn would have contact at times with the many varieties of disease that without the limitations of selection, seek the care of any larger clinic and at other times would study intensively a selected group of patients with some special sort of departure from normal. Should not our teachers know much of many different varieties of disease processes? How else can that be attained than in the personal study of many patients of many sorts and continued reading of a wide range of medical literature. Certainly for adequate apprenticeship training in the first period of hospital internship, contact with a general rather than a special type of clinic is essential to proper training. How may that be attained, if the clinic is broken up into subdivisions for special study with each intern and resident attached to a special group as so generally is the organization of clinics of internal medicine in the United States today?

Too often, it seems to me, I hear it said that nowadays medical literature is so vast that no one man can keep track of all of it. That medical literature is vast is true, but is that idea not too often used as an excuse for reading in only a narrow field, when really one is but excusing an inborn laziness that makes him shirk from the task of reading as much in various fields as it is possible to do? The result is that younger clinic chiefs generally seem to lack broad knowledge of their subject, and their teaching and leadership is, as a result, narrow and one sided, far more than it should be.

NEED IN THE CLINIC FOR SUSTAINED INVESTIGATION

As one looks about, the men most competent for sustained investigation now seem to be turning to the preclinical sciences rather than entering the clinics. Several factors, it seems to me, are working to that end. Clinic chiefs are tending to become limited in their knowledge of medical literature and familiar with a narrowed field of clinical observation. The many clinics enlarged and reorganized in recent years have offered many attractive positions to younger men and this has stopped that long sojourn in preclinical fields so commonly practiced by our predecessors in clinical

fields. The result is that few present-day clinicians have had prolonged contact in preclinical laboratories with the master minds in these fields. They have missed a most valuable training and discipline which then work in the clinic with its diverting interests and necessities incident to the care of patients has failed to supply. In the clinics, students are coming under less notable leadership than they would have had in the preclinical sciences. In organizing our clinics we have failed to secure the opportunity for mature, sustained investigation. Clinical problems are being investigated but few clinic heads have the ability for sustained investigation of related problems and, if they had, then numerous other duties would allow them no time for such type of work. Clinic chiefs, as we have them are needed and they fill well certain requirements of the clinic. No clinic can care for its patients satisfactorily unless it has a truly large group of clinically mature men and these have an important role to play in the teaching within the clinic. There is a need however in addition for the development of another type of clinic worker, the one whose great interest in life is investigation. Such men should have coordinate rank and remuneration with the present type of chief of clinic, the two types should work side by side. At present almost all that is offered as a reward to the former is the opportunity to become the latter type with duties that almost surely will preclude continuation in the endeavor that has won for him the right of reward by promotion. Lack of such opportunity to attain to positions of permanence and dignity with adequate salary is a deterrent to the man with a serious interest in sustained investigation from continuing in the clinic though there he may find problems of great interest to study.

It was this lack in the clinics of the past that was an important influence in the development of so-called whole time teaching in clinical branches of medicine. Whole time teaching with its artificial restrictions pointed the way to improvement and now the artificial restrictions are being abandoned largely because they are obviously artificial. The newer clinics are better but they seem little nearer to the investigational idea of a true university department of graduate study. This is being recognized in many parts of the world and new methods will be tried toward this end of more sustained, higher grade investigation within the clinic. It is with the hope that here in America the solution may be found that I have called attention here to the matter. Perhaps it is not possible, for the present to get any further than to realize the lack and to feel the need of the truly investigative aspects of the discipline of clinical branches of medicine. However that accomplished, an important step has been taken. University education has been going through attempts to solve similar problems, and they seem to have advanced further than have the clinical branches of medicine. This but emphasizes the greater difficulty in clinical fields, where the needs of patients are of first consideration. The more difficult problem should be but a challenge to greater effort. The problem certainly is not insoluble.

EDUCATION OF NURSES

Now, may I turn my attention briefly to nursing education, nursing service, in relation to what I have just been discussing. Please realize that I am speaking as one who never has had any direct contact with the problems of educating nurses but rather as one who in a life spent almost continuously within the walls of a

hospital has watched with keen interest how the product of the school of nursing has worked in the care of patients and cooperated in the investigation of clinical problems concerned with the study of patients. I say advisedly that I have had no direct contact with the problems of educating nurses, for in a service of eighteen years as physician-in-chief of a general hospital, I can recall no occasion on which the advice of the visiting staff of the hospital has been asked with regard to the conduct of the hospital's training school for nurses.

Viewed from such an outside position, to me the education of nurses, with rare exceptions, is entirely that of an apprenticeship in which the nurse learns, largely by doing under guidance the various maneuvers of the care of the sick with a modicum of instruction in the fundamental background of a knowledge of medicine. Here and there a graduate of such an apprenticeship enters on what may be termed a course of graduate study in nursing or some topic related to nursing problems.

To me this sort of apprenticeship seems the correct method in general for the training of nurses, except for those who are to participate in the instruction of nurses and in the guidance of their schools. It is the trained apprentice that is needed in the nurse and I may add the intelligent apprentice. At present in most training schools the attempt is being made to interweave into the practical apprenticeship the needed education in the underlying principles. For the physician in charge of patients this is not proving especially satisfactory, also I am told that for those interested in nursing education there is dissatisfaction. To me it would seem far more satisfactory if the nurse completed her nursing education, including instruction in practical nursing and then came into the wards for a period of apprenticeship in much the same way as at present do the interns after they graduate from the medical school. Perhaps a twelve months period of work of this type in the hospital wards would suffice, if it follows a thorough course in a nursing school. This arrangement would necessitate the hospital providing more graduate nurses for the care of patients, a movement already under way and one in every way desirable from the side of the professional staff of the hospital.

Under present conditions the nurse, to get her education, is constantly shifting from ward to ward and even from hospital to hospital with the result that too many persons become responsible for the care of the individual patient in each twenty-four hour period for the patient to get a genuinely satisfactory nursing care. As I see it, hospital nursing by student nurses is not as satisfactory as it was five or ten years ago, so far as concerns the care of the patients and the making of needed observations on them. This results in part from present methods of training nurses and is in part the result of a general change that has been going on, which has resulted in getting into training for nurses a less seriously responsible type of girls, no longer capable or willing to carry out meticulously every detail of the plan of treatment or investigation of the patient, a change that my friends in the business and industrial world tell me that they, too, observe in their personnel. I believe the time has come to separate the training school for nurses from the hospital as already has been done for medical schools. I see no reason why the training school should be a cost on the hospital funds, rather should it be financed as are other educational projects.

PRIMARY IMPORTANCE OF CARING FOR PATIENT

It is to be remembered always that the first concern of every hospital should be the best possible care of the patient. Nothing, however advantageous for the education of physicians or nurses, should be tolerated if it detracts in any way from the effectiveness of the care of the patient in the effort to mitigate his discomfort and to speed his recovery from his sickness. Those concerned primarily in the educational aspects of the clinic must have this constantly in mind, those concerned primarily in the care of the patient must see to it that it is done, provision must be made for the professional nursing care of the patient so that his care may reach the highest possible level of efficiency and effectiveness.

MENTAL HEALTH AS A NATIONAL PROBLEM*

RAY LYMAN WILBUR, MD

Secretary of the Interior

WASHINGTON, D. C.

Probably one of the highest compliments that can be given is to say that a man has good common sense, or to say that the people of a nation are sane and stable. All recognize to some degree the eternal conflicts between the emotions and the intelligence. These conflicts may be seasonal. They are associated with certain periods of life and they are fundamental in determining one's happiness, achievements and personality. From a national standpoint there is the most persistent evidence of the interrelations and interplay between intelligence and emotions.

Human behavior in the mass determines our successes or our failures as a nation. Politically, many of us at all times, and all of us at some times, act like the proverbial college sophomore. As an observing senator has said: "Our greatest safety is our organization by states, for not more than a dozen states are apt to go haywire at the same time."

Whatever we may do or whatever we are is determined by our nervous systems. Some one years ago, described what he called the "cerebrospinal parasite." He gave a picture of a few cells folding in at a certain time from the surface of the growing embryo and gradually through the growth and the extension of associated cells and fibers gathering control of the rest of the organism. The brain can be viewed as a colony of highly specialized living cells controlling practically everything that one does and yet dependent on the quality of the body juices for its safety and readily affected by the secretion of various glands, by toxins of various origin, by temperature, and by a host of other conditions. It may be a disturbing picture to think of the brain as immersed in fluids the character of which largely control its activities, but such is the case. Consciousness, will and personality defy accurate understanding. They are a part of that fog of mystery and mysticism that permeates everything human. We cover our ignorance with long words and by explanations that are largely descriptive. We do, of course, know a great deal about ourselves and about others, but when we think in terms of the mental health of a nation we are impressed by the variability in human material and by the accidental happenings that may determine the birth, growth and value of any single individual.

* Read before the Annual Congress on Medical Education, Medical Licensure and Hospitals, Chicago, Feb. 16, 1931.

A noble personality residing in a superb physical body may be completely changed by an attack of meningitis, by the use of drugs, by the gradual effects of some early disease on the blood vessels of the brain or the kidneys, or by the overactivity or underactivity of various glands. A sudden accident may transfer a person in a moment from stable self-control to tottering and failing mentality.

We know the wide range of variation in the capacity of individuals as regards both their physical aptitudes and their mental qualities. Just at present there have been so many changes in environment and in human requirements that we are conscious that we have passed through a stage of human labor when hands and legs were all that were needed to that of the brain and machine control of work. Our social set-up must always make provision for a large number of brains of inferior or very moderate capacity, while at the same time we must deal with those at the top and those who have extraordinary ability bordering on genius. The gap between special abilities and genius and those deviations of the mind which is called insanity seems to be very narrow. Aside from those who would be definitely labeled as mental cases there are many whose minds have a moderate twist up to half a turn. Any one in public life who receives a large "nut" must be conscious of the high percentage of cranks in our civilization.

We have to view ourselves and our neighbors as possible mental cases at some future date. As I have indicated, the incidents of disease or of accident may be determining factors, but the war demonstrated the unmasking effect of emotional overstrain.

Heredity is a persistent factor that cannot be lost sight of in national mental health. I suppose that the fact that every baby falls on his head has been of inestimable value in the comforting of parents and relatives when mental weakness or disease appeared in the family. There is little that can be done about heredity after life has once started. There is much that might be done if intelligence rather than emotions controlled the quality of the oncoming race. The blending of the various diverse elements making up the population of the United States is producing millions of individuals with certain definite traits. It is evident that this continent is an admirable place for us. There are but few difficulties in our environment that cannot be overcome by the applications of science in the fields of public health and community and industrial organization. We seem likely to go forward as a people for many centuries so far as the physical possibilities are concerned. The great question as we look ahead is "What kind of people are we to be from the standpoint of the mind and of behavior?"

Democracy demands at least a majority of self-maintaining competent citizens with orderly, cooperative habits and with balanced, temperate minds. The demagogue has always found some soil for his sowing. Disaster awaits any people with too high a percentage of the insane, the mentally defective or the emotionally unstable. Trouble stands at the door of any people who are not partially immune to sophistry. In sanity lies safety.

At the present time much of our care of those who deviate too far to the abnormal is that of simple capture and control. When once evidently established we try to classify our mental cases, treat them as well as we can, and live in hope that the difficulties will pass and the normal personality reappear.

We have done comparatively little in the way of prevention. Mental hygiene is now becoming a word with which we can conjure. It seems to me that with the increasing interest in each other which is compelled by our present economic and social organization, we are in a position where we must look to the safety of our future. Certainly we do not want to think of a period in which a considerable minority of our population is either living in institutions or entering or leaving them. We now talk in terms of millions in connection with mental diseases. At the same time there are certain changes in our attitudes and information that are hopeful. We are beginning to think of mental and physical disease in common terms. We have much less prejudice toward the insane, although certainly enough of it still exists.

The protection of the family given in the past to the imbecile or the mildly insane is now insufficient. A family living on a large farm could stand an occasional melancholy maiden aunt or an hysterical adolescent, a drunkard, an epileptic, and could find some use for even a reckless and unstable man. But we are now too close together to meet problems of this kind in this way.

The diseases in which the brain is involved are similar to those in which other parts of the body are involved. Simple recognition of the fact that mental sickness is simply another form of sickness would be of inestimable importance. Along with this growing change in sentiment, science has modified our conceptions of our environment so that ghosts, devils, imps, are joining the dodo bird in that limbo to which humanity sends its outworn conceptions or its relics of what has gone before.

What can we do to strengthen the mental health of the nation? In the first place, we must have trained men and women who know as much as can be known about psychiatry, and we must have every physician trained so that he will have an adequate conception of the various mental states. The profession of medicine has been so engrossed with its marvelous successes in the application of biology, physics and chemistry to the protection and treatment of human beings that it has paid little attention to psychiatry and to the mental side of patients. Certain experts have developed more or less by chance, but deliberate preparation of the medical profession in psychiatry has been in this country, for the most part, and in other countries as well, of a distinctly inferior character. This troublesome mysterious and difficult domain of health must be studied and restudied. As we conquer infectious diseases, as we prolong life, the necessity increases for us as physicians to assist in the living out of life under what we call modern conditions.

Happiness and something to do seem to go together. The intricate divisions of labor that have gone on in society require that this something to do shall be prepared for in an adequate manner. It is important for each one to find that particular niche which is appropriate to his particular capacities. A majority choose their occupations by accident and chance. Most of us do not know where our capacities lie. Some of those whom we value most during war give us the most trouble during peace. Some men seem to rise to highest honor in war or emergency, in peace they wreck themselves. Education is of the greatest value. Through it we can unfold the mind and its range and gradually find a place for each member of modern society.

there are physicians, few and far between, who are doing that very thing

The reason for this discrepancy lies primarily in defects of medical education. In the May, 1930, issue of the *American Medical Association Bulletin* the cover page contains a statement by Glenn Frank on "What the Great Doctor Must Know." In brief he said

The great doctor must know almost as much about the social order as the sociologist. This is necessary because the varied forces—political, social, economic, industrial, educational, religious—that march across a nation, making its mind or marring its spirit, register their effects in the lives of the doctor's patients. The more the doctor knows about these forces that make the atmosphere in which men's minds and bodies live the more intelligently can he trace effects to their causes, and the more wisely can he counsel his patients.

The great doctor must know almost as much about the mind as the psychologist. This is necessary because even the most materialistic scientist admits that there is a subtle relationship between mind and body that the doctor of the body dare not overlook, for when he does overlook this relationship a thousand quacks rush in to capitalize his oversight.

The great doctor must know as much about the subtle art of counseling as the priest.

How much have we, representing American medicine, done in medical education to achieve that goal? The chief reason why the community clinic has not found a greater ally in the community physician is that the medical student has been so lured along the easy path of monogenesis of human ills. Thinking in terms of unitary causations has been a much easier thing in general medicine than in psychiatry and we find the medical graduate so case-hardened that only rarely can he break through in his etiologic thinking to achieve a polygenic concept. The extent to which the neophyte in psychiatry clings to now heredity, now focal infection, now endocrinology, now an Oedipus complex in spite of the fact that multiple causations fit in his face constantly, reveals how constricting are the pathologic concepts fed to our medical students and how lost they become when the patient requires a consideration and balancing of several causations. The release from barren cryptic diagnostic formulations leading along single paths to inadequate prognostication and therapy has been a boon to the psychiatrist that may be carried over with profit to medicine as a whole. Only when something has been achieved along these lines can the community clinic and the community physician find a real percentage of value in their cooperation.

I do not want it to be understood from what I have said that community clinics have not found the physician friendly, interested and appreciative. He has been that and more. What I mean is that he has been shackled in a way that hampers the most valuable expression of his friendliness.

As I have indicated, there are others who have been interested in man-as-a-whole. Foremost among these others is the school teacher. Trained in different sciences and techniques and still legitimately concerned with mental health, the clinic and teacher have often battled over supposed trespassing on each other's ground. No community mental hygiene clinic can approach its goal without active participation by the teacher, and the mutual understanding with allowance for a fairly broad overlap is essential to cooperation. Her participation may be summarized by saying that she must practice pedagogy at its best and be one with the clinic when the problem with which she is faced

exceeds in complexity and severity the bounds of her class room and the specialized pedagogic services while the psychiatrist assumes a corresponding attitude. Such cases ideally will be relatively few, but actually the teacher has been just as much case-hardened as has the medical student. On the other hand, there is a very visible tendency, certainly more visible than with the medical school, toward a lumbering of teacher training. The community clinic is insuring its own salvation by participating in this lumbering process.

Community clinics originally linked up very closely with the work of the juvenile court. Some of our most important progress has come from this linkage. The most serious obstacles to greater achievement have been the traditions of penology and the inability to free the whole system of probation from political domination. Only rarely has the work of the juvenile court judge or his probation department, if such there is, been built on the philosophy which dignifies a profession. Where this has been achieved as now and originally here in Chicago, the community clinic and juvenile court working as a unit render a service which respects fully the highest ideals of psychiatry and criminology in their public health or preventive aspects. This originally independent handling of the problem of man-as-a-whole by the physician and by the court has been brought together in mutually strengthened cooperation rather than in the noisome conflicts between psychiatry and law that all too frequently mold public opinion.

The community clinic has found that its greatest ally, the one that could cooperate most readily in its case studies and case treatment, has been the social agency. On the average, far more attention is paid to the dynamics of human behavior in training the social worker than in the training of any other profession, including the physician. I would not say that the social worker graduating from what are comparable to grade A schools is better trained in psychiatry, but many a medical school could trade its specific psychiatric course for that part of psychiatry given elsewhere to social workers and gain immeasurably by the exchange. Much of the development of community clinic work has come about because the social worker sees the role of human dynamics and psychopathology in her cases and is unequipped to go further or is sufficiently prudent to abide by the bounds of her guild. True it is that she will have to be equipped even more than she is now before she can reach a point in case work that will leave a balance of more complex cases reasonably approaching in smallness the capacity of a community clinic. Her growth toward this ideal should be slow and deliberate, but even then it will have to wait for medical education, judging by the present speed of progress.

With the public health nurse, the minister and a host of other people dealing with the life problems of human beings, problems more or less dependent on peculiarities of anatomy and physiology as well as of human experience and social structure, the community clinic forms a functional linkage. A man in trouble does not divide his problems and experiences into categories for the judge, the physician, the teacher, the social worker and the clinic. His problem is a unit to him, it is one problem with many connected phases. It is indivisible, and when he is divided up among several professions for repair, the efforts just do not take.

In order to translate some of the foregoing generalities into concrete activity, let me follow through the functions of a clinic group on a case handled coopera-

tively with a social agency This pattern will be rather generally applicable

Here is Miss Allen, a case worker in a family welfare agency In meeting the problems of the Russo family in the tenement district she finds that 11 year old Tony is doing poorly in school, is constantly picked on by the other boys, or else sullenly keeps so apart from the group that his development is being seriously brased Miss Allen sees the probability of a psychiatric problem which calls for special help Knowing clinic routine from past experience, she makes a detailed study of the past records of the Russo family, amplifies this by some special examination of the family picture and school setting, and presents this social examination to the clinic with her report for its participation The clinic grants this request, the psychiatric social worker of the clinic, Miss McKay, reviews the report of Miss Allen and advises perhaps certain amplifications, which are then secured Tony is next examined by the clinic psychiatrist, physically and mentally, and the psychologist makes ratings of Tony's intelligence and other capacities This completed, all the participants gather together in what is called a staff conference, they present their observations, points of view and interpretations, reach an understanding of their differences, and come to a single picture of Tony's problem They decide what they should do in order to achieve healthier results Certain of these treatment jobs are of social manipulation, others psychotherapy, others deal with correction of physical defects and others with school difficulties Miss Allen takes responsibility for the social manipulation and goes back to her agency with a distinct job, yet a job correlated with and moving along with a larger plan The clinic keeps in as close touch with her work as if it were on her staff and vice versa Miss Allen has other cases which might benefit by clinic service but these are so numerous that only Miss Allen can handle them She may get direct or indirect help on some of these from the clinic in various ways Similarly the clinic comes to a better appreciation of certain family problems and their treatment So much for this pattern of cooperative relationship

Suppose in place of Miss Allen there is a probation officer, a child adoption agent, a teacher, a school psychologist, a visiting nurse or a family physician or psychiatrist It is evident that each of these in his own line can participate cooperatively in the work of the clinic and find the accessory services for a practically complete study of his problem case It is evident that his routine problems will be so many that he cannot always resort to such service but will have up to a certain point usually to depend on the building up of his own capacities

Community clinics, however, are not to be had for the asking They cost money, much money, \$20,000 or so for a full time service Furthermore, even with money assured, personnel is hard to get When one considers the smaller community, roughly under 200,000, the prospect of developing such a service is scant Money is too limited, attractions to the staff are too meager Such communities constitute about 80 per cent of the United States In such cases one has either to look to some fortuitous circumstance or else to such existing services as are conducted by state departments of health, mental hygiene, education or welfare, and universities Much of the progress of the future may be expected from the assumption by state hospitals and universities of the community responsibility for mental

hygiene through the conduct of part time community clinics

There is one point that must be appreciated however, in the furtherance of a community mental hygiene program through a clinic, namely, that, large or small, such a clinic can be fitted to a community only through careful study of that community Its structure (schools, agencies and courts) and its functions (traditions, laws and other elements) giving a distinguishing atmosphere Its pathologic changes, dysfunctions and defects have to be gone into just as one might do for a patient The community is a patient that wants help To provide such help requires group diagnosis and the willingness of one specialist in social organization to see his work in its proper relationships even though this means a disappointing delay in his opportunity to contribute to the therapy Mental hygiene more often than not has to step aside until some grosser disintegrating community defect in welfare, health or education is attended to Only in this way can a community clinic achieve a balanced function in community mental hygiene

Even after its establishment in a community with a fairly high level of work in its various mental hygiene fields, the clinic has constantly before it the opportunity through its cases to point out wherein the community needs changes in its social services, education, recreation, health and industrial planning Every case seen by a clinic presents, in addition, lessons which may be carried over to the adults concerned with the case The community clinic, in addition, uses its materials for professional training "Case" in a community clinic means not only an opportunity for therapy, it becomes, also, and sometimes with greater value, a medium of community education and organization, and a problem for research

SUMMARY

The mental hygienist in developing his preventive and early treatment program is confronted with a more complex situation than the physical hygienist in that his subject, man-as-a-whole as contrasted to his parts is a freely moving agent which is constantly changing its relationships and inducing responses from people on a variety of grounds Prevention in mental hygiene work hence has been sought not only in medicine but also in criminology, social service, pedagogy and religion and a successful community effort must coordinate these varied approaches Mental hygiene, consequently, depends on the willingness and capacity for cooperation of a number of co-equal groups no one of which can assume too much authority This entails an extensive improvement in professional education so that the teacher will teach better, the social worker and public health nurse will do their jobs better, the judge will plan better for his cases, the minister will guide better, and the physician will see his problems with their broader implications This last means a new shading, not an added subject to medical education The mental health activities of a community cannot get ahead of these advances in professional training The clinic can provide service to the few cases whose mental hygiene needs exceed the capacities of other agencies in the community it can shoulder the jobs of others only temporarily and pending the development of these capacities Beyond clinical service it carries a responsibility for community education and organization The mental hygiene of a community is a compound whole community job in which the clinic provides leadership and a limited specialized service

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THE RÔLE OF THE STATE HOSPITAL IN MENTAL HYGIENE*

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In reviewing the care of the mentally ill and the fundamentals of the mental hygiene movement to wit, the prevention, diagnosis and treatment of mental illness, one notes a definite role that the mental hospital has always played and always will play in the movement a role that will not be effaced but, on the contrary, will become more prominent with the passing years.

The role of a research and treatment agency cannot be denied the mental hospital of the past. The great mass of knowledge on mental hygiene now possessed came through such institutions. The part played by these institutions in the broader fields of prevention, through mental clinics, social service and educational activities, in more recent years likewise tends to fix them more permanently as the keystone in any physical organization for the practical application of mental hygiene. In rural districts, particularly, these institutions have become such integral parts of organized community mental hygiene forces that there are those who have a strong conviction that the rural mental hospital should be the logical mental health center of a rural community and as such should lend its building program, personnel and administrative policies to this end in order to assume its logical leadership. Furthermore, they realize that this can be done in such a way as to harmonize with such policies, rules and regulations as might be laid down by central boards of control, welfare departments or state commissioners of mental hygiene.

The mental hospitals of urban districts are likewise playing their role. However, one can sense the necessity of having to harmonize these institutional programs with the local municipal departments of health as relates to clinics, to the consideration of specialists in psychiatry who abide in such places for the pursuit of their profession, to the many social agencies and to the educational institutions. I believe that many such institutions are lending their efforts to this end but, owing to the many dovetailings of the activities with other agencies in the urban districts, the activities are not as clear cut as those of the hospital in a rural district in which the fields are meager so far as social agencies and psychiatrists are concerned.

Merely stating a proposition without foundation or fact carries little weight other than a suggestion. It remains therefore, for me as the essayist to present for consideration in outline of the organization, administration and results of the mental hospital in its role in the mental hygiene movement that would substantiate the statement that the mental hospital is one of the basic keystones in the physical organization for the promotion of any community, city, state or national mental hygiene program.

First and foremost, I should ask that the field to be covered and the geographic location of the mental hospitals to this field be borne in mind. These institutions are so situated as to serve both city and rural districts and, with the exception of a few hospitals in the larger

cities, all are in rural districts. The so-called urban hospitals, in addition to serving cities, also serve additional counties of rural make-up. Furthermore, I think that everyone must agree that in the rural fields lie the greatest obstacles to a practical application of a mental hygiene program if there are no mental hospital activities. For example, there are no psychiatrists and few if any community health organizations, while traveling mental clinic contacts are too infrequent and unsatisfactory. The cost of child guidance clinics in these areas makes their use prohibitive. The educational institutions are in many instances lacking in professional personnel for the examination of school children. There are no available psychiatrists for contact with the normal schools, colleges and universities. On the other hand, if the mental hospitals are utilized and with but little additional expense adequate community service departments are organized, far reaching will be the influence of these institutions. Such a department can provide mental clinics, the examination of school children, lectures for colleges and universities (with hospital visitations) and talks to various service clubs, as well as health news to the public press and visitors to the hospital. It is also possible to publish a mental health bulletin quarterly for selected readers in the hospital district.

The field to be covered, the facilities at hand, the cost, the consideration and the results obtained are the guiding criteria in the field of business and must necessarily be considered in mental hygiene activities. My own experience has been that utilization of the mental hospital with cooperation on the part of the community in providing some small expense, quarters, and utilization of their regularly organized forces gives the best and least expensive facilities and covers the field more thoroughly and with more satisfaction to the community than other types of approach. In the larger cities, other agencies might be utilized to a better advantage and the city mental hospital relegated to a purely custodial and treatment institution. My convictions are, however, that these institutions, as those in rural districts, should become a very vital part of the mental hygiene program.

As I have indicated in a preceding paragraph, in the event of either a rural or an urban mental hospital entering the field of mental hygiene, there are certain fundamentals that these institutions must possess, namely, physical structures, personnel and adequate administrative programs. It is needless to say that, first, these should harmonize with the advanced thought of mental hygiene as relates to prevention, through clinics and education. Secondly, there should be proper units for research, and observation of borderline cases, sections for the treatment of the acutely ill those requiring constant hospital care and supervision for colony supervision and for diseases of an infectious nature. Furthermore, I believe that the patients treated should be restricted to those suffering from neuroses, psychoneuroses and true psychoses. A large number of admissions of idiots, imbeciles, epileptics, juvenile delinquents and feeble-minded obstruct the progress of a true mental hospital. Fortunately, in Pennsylvania, individual units for each class have been begun and the day is anticipated when the mental hospitals will be purely for the type of patients enumerated. In conjunction with the physical units there should be all the necessary scientific, research, laboratory and treatment facilities, the latter including the various therapies.

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Second in importance is the personnel, headed by officers, physicians, executives, skilled business men and artisans of trade of the best training and personalities. A training school for nurses is essential, as well as the special therapies. In both the professional and the business side, the activities should be so grouped and checked as to warrant a continuity of service. Definite programs of business should be insisted on. Definite professional programs of psychiatric conferences, physical diagnostic clinics, eye, ear, nose and throat clinics, dental services and x-ray and laboratory services should be had. The organization of a community service department is absolutely essential.

In other words, the hospital's organization should be executive and professional, the latter divided into an intrahospital unit and an extrahospital unit, the latter in charge of a clinical director who has direction of the clinics in the field and of the educational programs and activities, the former under the direction of the assistant medical superintendent.

Such is the ideal background of a hospital in its mental hygiene career. I am not unmindful, however, that there are few if any mental hospitals so well rounded out. On the other hand I feel that it must be a poor institution indeed that does not possess some of these fundamentals. With certain of these fundamentals and the creation of a comprehensive, organized community service department, however, at a little expense such a hospital's efforts would meet with a degree of appreciative response that would tend to lessen the strain and energies put forth to this end.

As I have said, many hospitals, particularly in rural districts, have begun such mental hygiene activities. For the results of such a program, however, I can present only one with authority, and that is the efforts and results of the Danville State Hospital.

In 1920 I made my first contact with this institution. My knowledge of mental hygiene was such as I was able to integrate from the teachings of Mr. Beers himself, Dr. Thomas W. Salmon and Dr. E. Stanley Abbott of the Public Charities Association of Pennsylvania. The institution had an excellent background and physical foundation. It is distinctly rural, serving twelve counties representing an area of 9,170 square miles and a population of 874,000. There were no psychiatrists in the community save those attached to the state hospital and one county institution. No mental clinics were available. (As to the psychiatrist this remains true today excepting for one instance, in one of the cities of our district, and this psychiatrist is associated with us in our clinical work.) There were six educational institutions aside from the public schools. Such was the barren field. Such was the opportunity for service.

The mental hygiene program at that time was sponsoring improvement in our hospitals as related to diagnosis, research and treatment services, also adequate professional services and well trained nurses and physicians and special therapists. In the broader fields were the expansion of social service, the establishment of clinics and the enlightening of the public, the latter rather vague as to how it could best be done. The task confronting the hospital administrator was an organization to meet the needs. An organization with intrahospital and extrahospital functions was the result.

By 1921 the hospital's administrative program was complete, including a community service department embracing mental clinics and educational activities, with a director in charge, Dr. H. V. Pike whom many physi-

cians know and who is associated with me at the present time. Dr. George B. M. Free, assistant medical superintendent, was in charge of the intrahospital activities.

A summary of the results of this service I think, will be sufficient to justify our years of effort in a piece of work, pioneer in nature voluntarily assumed (as it was not a part of the state program) aided only by a sympathetic board of trustees, department of welfare, an appreciative community and a cooperative group of physicians and educators in our district. Furthermore, it represents in a practical way the role of a rural mental hospital in mental hygiene and of one particular pattern now in operation for almost ten years.

Modesty forbids that I stress the virtues of our hospital. However, I must present certain phases of its activities to illustrate certain points. The intrahospital unit is of the modern type. The community service department with an organization consisting of one clinical director and one community service investigator provided by the hospital, with the various cities and towns in the hospital community providing one full time psychiatrist, one part time physician, one part time psychologist, six registered nurses, two social workers and two stenographers, represents the clinical side. The ten mental clinics registered 10,532 visits in eight years. Of these, 4,091 were new cases, 2,587 return visits and 3,854 furlough visits. Of the new patients, 65 per cent were children under 16 years of age and 35 per cent were adults above 16 years of age. These cases were referred by the medical profession, court officials and community agencies. An analysis of these cases in greater particulars was presented to the American Psychiatric Association in 1929. It is interesting to note, however, that of the children examined 83 per cent of these cases are still in the community with only 17 per cent committed to schools and correctional institutions. Of the adults, 73.3 per cent are still in the community with 26.7 per cent having been found to require actual hospitalization. To aid in the supervision, adaptation alone of such a large group in the community represents a saving of thousands of dollars to the commonwealth.

On the side of educational contacts, more than 65,000 teachers and students have been reached with lectures and addresses on mental hygiene. The mental health bulletin published by the hospital has reached central commissions of forty-eight states, also the colleges, schools, libraries and selected readers in our hospital district. Monthly mental health talks have been presented to twelve papers for the past two years serving a population of more than a million readers. About 400 or 500 reprints of these talks are given to visitors to the hospital. If such aggressive attacks as these against ignorance, superstition, legends and traditions meet with no avail, one might as well give up the ghost.

On the medical side we are in close contact with organized medicine. The Montour County Medical Society meets on alternate months at the hospital. An annual mental hygiene meeting is held at the hospital for the physicians of the twelve counties. (In addition to these visitations, from 2,000 to 3,000 college and high school students visit the hospital for the follow up clinics to their lectures and for visitation of the entire hospital each year.) In addition, forty-eight monographs of the nature of research and practical consideration of mental disorders and their treatment have been released for publication. The superintendent and the clinical director serve as regularly appointed neuro-

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psychiatrists to three of the larger general hospitals in the district. Consultation is also provided the other general hospitals on request.

This contact with the general hospital, I believe, makes one of the greatest contributions to the mental hygiene movement as it relates to encouraging the general hospital to serve as an examining station, stations for short periods of observation or real treatment agencies for certain recoverable types. The relation to these hospitals I believe has overcome somewhat that old reluctance to receive into a general hospital any kind of patient to whom psychic reactions dominate the clinical picture. Correspondingly, the members of the staff of one institution (the Geisinger Memorial Hospital) serve as consultants to our hospital in their respective specialties: surgery, medicine, roentgen ray, eye, ear, nose and throat. They also receive and surgically treat in their wards mental cases susceptible of hospital adaptation. It has been years since we have had to resort to our own operating room for major operations. We also provide a lecturer on neuropsychiatry for the training schools of these general hospitals.

In the foregoing, I have tried to present in the time allotted me such citations of facts as to warrant the following conclusions:

- 1 The mental hospital can be made one of the keystones of the mental hygiene movement.
- 2 It has and always will play a definite role in research and treatment.
- 3 Its clinics and educational activities are two of the greatest forces in carrying the doctrine of prevention.
- 4 It lends its broad arms to medical education.
- 5 It is one of the greatest mediums for public enlightenment.
- 6 All of which may be done with satisfaction, peace and harmony in its many related fields.
- 7 The cooperation of the physicians in the district will simplify and make possible the approach to the problems.

THE HOSPITAL, THE MEDICAL COLLEGE AND THE INTERN*

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There is general recognition of the fact that the period which the medical graduate devotes to internship is one of the most valuable in his whole career. The medical college, the hospital and the intern are all vitally interested in the subject.

The medical college has as its most important function the preparation of young men and women for the general practice of medicine. It takes the student after several years of college preparation consisting largely of elementary training in the sciences, and endeavors to give him as thorough instruction as the time will permit in those fundamental sciences that underlie the practice of the profession. They further endeavor to give him an introduction to the theory and practice of clinical medicine. After at least six years of instruction the student comes to the end of his college course. His career thus far has not only been a succession of courses of instruction but a discipline that seeks to form helpful habits of study and self-control that will fit him for his future life. The college

has endeavored to furnish him with all the working tools necessary for his future service, by means of which he may attain proficiency in the practice of his profession.

During at least the last two years of his college course he is daily in contact with patients in the dispensary and wards of the hospital that serves the college as practice laboratory. These contacts have been primarily as auditor, observer and clerk. While he has been held responsible for some of the minor routine duties connected with the care of the patient, his responsibilities have been very limited. He has learned methods of physical examination and diagnostic procedure, he has been guided in making diagnoses and in suggesting therapeutic measures. His instructors have always been at hand and the welfare of the patient has in no wise depended on his decisions or opinions. His work has been constantly scrutinized, verified or corrected, and his graduation is an indication that the faculty of the college believes that he has sufficient knowledge, judgment and ability to begin the practice of his profession.

It has also been the endeavor of the college faculty to imbue the student with the high ideals, ambitions and ethics of the medical profession.

It is generally recognized, however, that even though the clinical training in colleges has been greatly extended and improved in recent years, the student at the completion of his courses is not fully or properly qualified to undertake the responsibilities incident to independent practice.

Fourteen states and as many medical colleges now insist that the graduate spend at least one additional year in supervised clinical work before a license to practice is granted or, in the case of the colleges, the final degree is conferred. The colleges that have imposed this requirement subscribe to the opinion that it is the responsibility of the college to certify to the competence of its graduates to practice medicine. For the most part, those which do not prescribe a fifth year requirement believe that it is the state's responsibility to determine the graduate's fitness to care for the sick or injured.

Those colleges requiring a fifth year of clinical medicine are naturally most interested in the composition of the internship which their students shall serve. They are insistent that it shall provide educational opportunities which are of real value to the student, opportunities for the student to assume responsibility for the care of patients whereby he may enhance both knowledge and experience. It is desired that there be adequate facilities for the modern practice of medicine, for reading and for study. The college expects that the staff of the hospital shall have an active interest in medical education, shall properly supervise the intern's work and shall direct his studies and professional activities. Some individual member of the staff should serve as the intern's preceptor and at the same time as the college's representative. Reports to the college concerning the intern's work should be made. It is only in this way that the college can develop a mechanism that will enable it to maintain proper control of the student during this year and permit it to give academic credit for his work.

Shortly after entering on his clinical studies the student begins to consider the question, "Where shall I serve my internship?" By the end of his junior year he is seriously engaged in an inquiry concerning the subject. He turns quite naturally for advice to the

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interns and residents with whom he comes in daily contact. He may consult members of his faculty and also refer to the literature. In many colleges, including the University of Cincinnati College of Medicine, the question of internship is the subject of a formal lecture to the students early in the senior year. The limited time permits only a brief discussion of the situation. The requirements of the college, the organization of the hospital, the importance of its primary function, the place of the intern in its organization, the need for the observance of its rules and regulations, and the necessity for exercising discretion, good judgment and self-control are emphasized. Lists of hospitals approved for internship by the American Medical Association and of those in which former interns have had service satisfactory to the college are published. In addition there are personal interviews between the dean and other members of the faculty and the individual students.

From these interviews, the dean or a selected member of the faculty may obtain an intimate insight into the student's plans and ambitions and be enabled to offer helpful advice or often to direct the student to the type of internship best suited to his needs and instruct him how to proceed in order that his plans may be best accomplished.

Before the University of Cincinnati adopted the fifth year requirement, all its students, for many years, had voluntarily served internships of at least one year's duration. In recent years, however, and I believe this to be true in other colleges as well, an increasing number have planned to spend one or more additional years in clinical training. This desire is often developed in the course of the personal interview, and plans are formulated whereby such extended service may be obtained. Internships are therefore in demand in those institutions in which the opportunities for advanced training are best developed.

In considering the intern, it may be well to picture the young man on the eve of graduation. He is a mature individual who has spent at least six years of his life in college preparing for his life's work. He has acquired a broad training in the fundamental sciences and has had limited clinical experience as a student. He has been imbued with the high ideals of his profession and is enthusiastic and ambitious to put his knowledge into practice. His graduation and the license to practice which he may have acquired by state examination have definitely made him a member of the profession. Before the law he stands as an equal with his seniors, and now, though they may still be his instructors, he is their colleague and he expects to be treated as such. His enthusiasm may lead him into error, but his motives are usually good and his intentions of the best. He is still young enough to enjoy the various sports and needs a goodly amount of physical recreation. He is ready and anxious to go to work. Though he has studied in the wards of a hospital he has not been a part of its organization and has probably not given much thought to the hospital beyond the actual ward performance as he has seen it. He knows little concerning its complexities and is confused by the many rules and regulations he encounters.

The primary object of the internship, as has been indicated, is to provide opportunities whereby recent graduates may obtain practical experience in the practice of medicine under proper supervision. The hospital offering intern training must recognize its responsibilities to the student. These responsibilities

primarily concern the administrator and the medical staff. Their attitude toward the young graduate is of great importance, unless it comprises a recognition of his needs, of the reasons for his service and an understanding of the value of the internship in relation to his future career, unless they provide ample opportunities for experience and study and constantly stimulate in him a desire to make the most of those opportunities they have no right to ask the young graduate to serve in their institution merely in order that tiresome routine duties may be performed.

The administrator and the medical staff together should definitely organize the intern service and see to it that the new intern is properly introduced to the service.

It is the responsibility of the administrator to explain the general organization of his institution. A tour through the hospital before the intern enters on his service with introductions to the several heads of departments, has been found to be very helpful. It is the duty of the administrator to see to it that the hospital provides proper living quarters for the intern staff and that their food and other requirements are adequately served. Recreational facilities should be provided, for it must not be forgotten that these young men and women have need of diversion and healthful exercise.

It is the responsibility of the medical staff to provide for the professional training. The service should be definitely organized and should provide for the assumption of increasing responsibilities by the intern as his ability and proficiency develop. The intern should be placed in direct charge of every patient admitted to the institution, whether indigent and in the free service or a private patient. He should be required to take histories, make physical examinations and diagnoses and direct therapy for all patients under the supervision of the staff. The attitude held toward him by the members of the staff should be that of colleague and consultant. They should thoroughly discuss all elements of the case with him, correct and direct him, and suggest diagnostic and therapeutic measures when necessary.

As a student, the intern has been primarily trained in the scientific, empiric and theoretical aspects of medicine, he should now be introduced more thoroughly into the art of applying this knowledge. He should therefore be taught the proper approach to the patient and to relatives and friends. He should be required to meet those interested in the patient and interpret the observations and opinions of his staff officers, explain to them the progress of the case, the measures of relief and therapy that have been advised, and in every way conduct the case as though he were directly responsible. It goes without saying however, that in all of this he should be guided by his staff and that he should bear in mind the relation of his superior to the patient. Should the patient's malady terminate in death, it should be his duty to make the request for autopsy. In this he can hope to be successful only if he has won the confidence of the relatives.

The medical staff is also responsible for the provision of adequate library facilities. It is its further duty to stimulate the intern's reading and study. By encouraging and insisting on his participation in clinical conferences and in the presentation of theses and case reports much can be accomplished.

In addition to these measures of professional training the staff carries the grave responsibility of the intern's

training in medical ethics. Though he will have had instruction while in college in the ideals and ethics of the profession, the attitude and conduct of the various members of the hospital staff toward one another will primarily influence his future development in this regard. Destructive criticism and questionable practices on the part of intern's staff officers have only too often wrought serious harm to the character and career of a young man. Though the college may have done its task as carefully and thoroughly as possible, the influence exerted by the intern's superiors will take precedence in most cases. It is the hospital, therefore, and particularly the members of the hospital staff to whom we must look for the final development and proper introduction of the young man to the art and ethics of the practice of medicine.

In return for these many educational advantages and opportunities, the hospital has a right to expect that the intern will conscientiously devote himself to his duties, even to those that are uninteresting or of a routine nature, that he will conduct himself as a gentleman and as a full-fledged physician, that he will fit into his important but relatively minor place in the hospital organization in a harmonious manner, do everything in his power for the good of the patients assigned to him and refrain from doing anything that will in any way interfere with the best interests of the patient or of the hospital.

If the college, the hospital and the intern will develop this attitude toward the subject of intern service, a solution of the many vexing difficulties of which each of them often complains can be hoped for and every internship can be expected to be of real educational value.

Cincinnati General Hospital

THE HOSPITAL TRAINING OF INTERNS*

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The present medical school enrolment in the United States (1930) is the largest in twenty years, totaling 21,597 students. There are eighty-seven approved medical colleges in the United States, Philippine Islands and Canada, eleven requiring that students shall have completed a fifth year as intern in an approved hospital before the degree of Doctor of Medicine will be granted, while sixteen states including the Territory of Alaska and the District of Columbia require an internship before the license may be applied for. In 1930 4,561 students graduated in medicine, 119 more than in 1929.

There are at present in this country 648 hospitals approved for intern training, with a total of 193,557 beds furnishing service for 5,496 interns. These internships, which become available and are filled each July, have all been carefully supervised by the Council on Medical Education and Hospitals of the American Medical Association. Many of the services are excellent, furnishing the recent graduate extraordinary opportunities to study disease at first hand and under the direction of splendid teachers of national reputation and of the widest experience. They constitute, however,

but a small percentage of them all, many new doctors being obliged to secure what experience they can in hospitals, the service of which is characterized chiefly by its mediocrity.

DEFICIENCIES OF INTERN TRAINING

In such hospitals there are many basic deficiencies. The men are not taught; there are few discussions of case histories, there is little or no check of preoperative and postoperative diagnosis, there is too much technical training in the laboratory and not enough study of tissue, both gross and microscopic, the intern is given responsibilities for which he is not trained, he is told something of disease but little of its mode of onset, cesarean section is made impressive and dramatic, but nothing is said about pinworms, the intern's studies of the patient are ignored and his tentative diagnosis disregarded although he may frequently be right, the intern is given insufficient opportunity to do things *under supervision*, he is not instructed in making pelvic examinations, there are too infrequent presentations of case reports and other short papers by members of the intern staff with constructive criticisms and analyses by the chiefs. The men are not encouraged in collateral reading, in the study of bibliographies and in preparation of abstracts; they are left too much to shift for themselves; staff meetings are irregularly and too infrequently held, there is too little bedside differential diagnosis, too little training in tact and in the handling of patients and patients' relatives, too few independent diagnoses by the interns adequately checked by chiefs, too few examinations in the nose and throat departments, too little obstetrics, too great a lack of detailed bedside instruction, too few seminars by the staff members for the benefit of the interns, too little explanation by chiefs of the rationale of their treatment.

ESSENTIALS OF A GOOD SERVICE

It is greatly to the intern's advantage to serve a rotating service in a hospital having active services in the various major branches of medicine and with a fairly rapid turnover of patients. Many hospitals curtail the service so far as the examination of the private patients are concerned, a condition I believe to be wrong. The recent graduate in this day is capable, in most instances, of being given carte blanche in the taking of histories and in the making of physical examinations of all the newly admitted patients, not only in the ward but in the private service as well, for it is a mistake to limit these young men merely to the study of the dispensary and the ward case on the assumption that they have not as yet acquired sufficient tact and refinement to render them worthy of the confidence of the patient of the upper walks of life. One of the essentials of their training is the art of handling people, and the opportunity of acquiring and developing it should be fully afforded the intern and he can profit much in this regard from close association with his chiefs. He may thus learn that often men get along more because of tact than of talents.

There is nothing more helpful to the alert intern than well arranged clinicopathologic conferences. They should be held at least weekly, under the direction of the hospital pathologist and his associates. At such meetings a lantern slide giving a brief abstract of the patient's history should be thrown on the screen to be discussed and elaborated on by the men who have had the patient under observation. The pathologist continues

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with a discussion of the gross pathologic observations at operation or autopsy, demonstrating the specimens, previously prepared in Kaiserling's or Lundquist's solution and painted with gelatin to render them odorless and dry, supplementing his description of the gross specimen with a demonstration by means of the projecting microscope of the pathologic changes. Any hospital worthy of giving the intern year should have a competent pathologist interested in teaching and willing and able to conduct these most stimulating and helpful conferences.

CONFERENCES AND SEMINARS

In the survey of hospital intern service for 1930 by the Council on Medical Education and Hospitals, 1,491 replies were received from a questionnaire sent to interns representing 700 hospitals. Of the 1,491, all but 84 attended staff conferences but only half attended clinical lectures, and the comment is made that "clinical conferences and lectures, although of unlimited value to the intern, apparently are not being utilized." More than 600 failed to answer the question or definitely reported nonattendance at such meetings, indicating, apparently, that they were not provided.

All well conducted hospitals hold periodic staff meetings, which should always be open to the interns. Such meetings are held monthly in most hospitals, although in the full time staff institutions a weekly meeting is conducted in which the interns take an active part. At these meetings interns should read at least one paper each year, usually based on a clinical study of a large series of cases taken from the hospital records, with a review of the literature bearing on the subject under consideration, the papers to be discussed and criticized by the men of the staff. But this is not enough, besides the regular staff meetings and the clinicopathologic conferences a series of seminars, arranged especially in the interest of the intern and dealing with all the major specialties, should be conducted by the members of the permanent staff. The roentgenologist should have periodic meetings in his department during which films are examined and roentgen diagnosis and differential diagnosis thoroughly discussed. All this may seem somewhat utopian but may be easily arranged and is no more than the conscientious staff should feel it owes the younger men. Such a program is carried out in the institution with which I am connected, a 185 bed general hospital with a full time staff providing service for seven interns and two residents.

TRAINING THE SURGEON

No intern should ever expect to become a surgeon merely on the training secured during a one year's rotating service. I thoroughly agree with the opinion of the Council when it says in its 1930 report that "the idea apparently growing that interns are in hospitals primarily to acquire surgical technic and become surgeons without additional graduate preparation in that subject should be discouraged." Many men limit themselves to a one year's hospital residency before attempting a surgical practice, feeling that they receive thereby sufficient training in this brief space to warrant their entering on the specialty of general operative surgery. That such a thing is being too greatly encouraged in many hospitals has been the finding of the Council. In its last survey it was found that 53 per cent of the interns were permitted to do major surgery. Indeed, some of the operations described would seem to require more mature skill, even if this was performed in most

instances under strict supervision. That a majority of the interns reporting indicated that they are allowed to perform major surgery, even under supervision, at first glance is surprising, if not alarming." Such gross disregard of the welfare of the patient as well as of the good name of surgery cannot be too severely condemned.

A working knowledge of technical surgery is a difficult thing to acquire, requiring much time and patience and far more experience than can be obtained in the few months' surgical service of a one or even two years' rotating service and, by the same token and what is even more important, surgical judgment is acquired only after years of experience. One cannot train surgeons as one used to train children to swim, by throwing them into the water, but that such methods are being all too extensively utilized is manifested daily by the enormous number of unnecessary operations, usually badly done, and on the most meager provocations or on no provocations at all, being performed throughout the country largely by young men who have set themselves up as general surgeons after the most superficial and incomplete hospital training. A serious responsibility rests on any hospital whose organization is so loosely supervised that its interns are encouraged to delude themselves into believing that they may become competent surgeons after such brief and sketchy operating experience.

The young men planning to go into surgery or any major specialty for that matter, requiring a high degree of technical training and manual skill, should consider the one or even two years' rotating service purely as an important and essential period of preparation before obtaining further and more intensive experience in an institution dealing chiefly with that branch of medicine in which he is especially interested and to which he plans devoting his life. In the past fifteen years 64 per cent of our own ex-interns have gone further and taken from one to three years more of graduate study in well known clinics and hospitals. This has been an excellent trend, and it must be encouraged and furthered in all hospitals, especially in those with one year services, if high class, well rounded out men are to be turned out whose training to cope with the complexities of modern diagnosis and therapeutics may be considered at all adequate.

THE LIBRARY

Every hospital having an intern service should possess a well stocked working library. In addition, it should subscribe to the best and more important American medical journals. Our 185 bed institution annually pays the subscriptions for forty-two journals. The books of the library with the current periodicals should be available at all times to the members of the intern staff, while a comfortable and quiet reading room adjacent to the library should be provided. The *Quarterly Cumulative Index Medicus* should have a prominent place, and its use should be explained and the men encouraged in frequently resorting to it.

It is gratifying to note that most interns are receiving ample laboratory instruction yet the comment is made by the Council that it is less gratifying to note that there were 333 of the 1,400 answering questionnaires who did not obtain experience in the laboratory department while only 377 of the 1,491 were receiving x-ray instructions as part of their regular service. Such disregard of their obligations to the intern should render these institutions ineligible to give the intern year and

they should invariably be removed from the accredited list until their deficiencies have been fully corrected

PERSONAL EXPERIENCES

During the past fifteen years I have had sixty interns under my direction in a hospital in which the men spend one year on a rotating service. To these men now in practice for from one to fourteen years, I recently sent a questionnaire dealing with their former intern experiences. All replied, answering certain basic questions and, as was requested, commenting frankly and freely on their intern year now observed from a distance and with the perspective of the experienced practitioner. At the same time our present interns, nine in number, now on active service in the same institution, were asked to prepare a short essay on the subject of the training of the hospital intern as they were observing and experiencing it. They were asked to discuss freely its deficiencies as well as its advantages and to offer frankly any suggestions for the improvement of the service. The information so received has been most interesting and helpful and has really served as a text for this paper.

A request that he speak his mind will never be passed up by the modern hospital resident. He welcomes the opportunity, seizing on it with the greatest enthusiasm as a welcome chance to unburden his mind of matters that have long obtruded themselves and to tell the hospital, the superintendent and all his chiefs just what is wrong with things and how best to correct them. No hospital official should make the mistake of disregarding these expressions from the heart, for they are invariably sincere and are often revealing and invariably are helpful to all concerned. As members of the staff we always know exactly what we think of the interns and they are usually fully appraised in the first few weeks of their service when we estimate and cross index and catalogue them in our minds quite definitely, but rarely do we know what they think of us. If interns were asked to set down with perfect frankness in account, as they see it, of the service given them and of their unalloyed opinion of the men who are responsible for these services, it might be surprising, at least the point of view of the intern and often a lot besides would be learned, most of which would do far more good than any possible harm, unless it be to one's exaggerated and, perhaps, unjustified pride, and this harm, paradoxically, really would do good. Although we have never, in fifteen years of our hospital history made such a survey before, it will hereafter be an annual event, much, we feel, to the future good of the intern service and to a distinct betterment of the relationship between these young men and their chiefs.

THE FULL TIME STAFF AND THE INTERN

There are but relatively few hospitals with full time staffs. The Mayo Clinic, the Henry Ford Hospital, the Cleveland Clinic, the Robert Packer Hospital and the George F. Geisinger Memorial in Pennsylvania are examples. An intern service in an institution so organized offers distinct and unique advantages. The men are constantly under supervision and direction and yet, while given a free hand in the examination and treatment of their patients, are in position to obtain counsel and advice quickly or to be checked and properly directed as the case may require. They are closely associated with men highly trained in their respective fields, all working in the closest harmony in a perfectly coordinated group endeavoring, through the utilization of every means necessary, to make as accurate and as

complete a diagnosis as is possible and with the minimum of delay to the patient, to be followed by the carrying out of the most appropriate treatment. In all this the intern has an active part, passing from one service to another yet constantly in touch with all the services through the medium of frequent consultations, clinicopathologic conferences and staff meetings. In a year's experience on a rotating service such as I have described, with a large and active service rich in varied clinical material, the alert intern should obtain a comprehensive and fairly accurate conception of the entire field of medicine and should be especially well prepared to decide on the branch in which he desires to major and to select the institution in which he can secure intensive training with the greatest advantage to himself.

FURTHER GRADUATE STUDY

Many men are satisfied with a one year's service while others would like to spend more time in institutional work but are obliged, because of economic or other reasons, to forego it. Although not always the best men yet as a rule they are from this group, a larger number each year of our own interns are electing to continue their graduate studies in other hospitals or in investigative work in our great laboratories of research, or to enter on fellowships in one of the several institutions offering such advanced training for the occasional and especially outstanding man. The men of the latter group probably do not constitute more than 5 per cent of all recent hospital graduates, yet from them are coming many of the future leaders.

Referring to my questionnaire, I find that of our recent interns 62 per cent elected to go further with from one to three years more in laboratory or hospital work before going into practice. We have strongly encouraged the continuation of graduate study and, as time goes on, a larger number are failing to rest content with a one year's service. All of our men from the 1929-1930 group continued in hospital work. It is also customary with us, as with many hospitals, to select each year several of the outstanding men, providing them with a stipend of from \$100 to \$150 a month and with hospital maintenance for a year's residency in our own hospital in various departments. We have also sent men of especial capabilities to other clinics for from six months to a year, paying them a living stipend and having them return, ultimately, to take assistantships on the permanent staff. Thus it is possible gradually to build up a staff of especially selected men, all of whom must first measure up to exceptionally high standards of character and natural, inherent ability, one of the greatest advantages of the full time staff plan of hospital organization.

SUMMARY

Irrespective of how well organized the intern service may be and of how great the effort put forth by the heads of departments to render the training of the most practical value, the greatest accomplishment will not be achieved without a certain basic principle being borne in mind. The young doctor fresh from the medical school and entering his intern service begins now to practice more of the science than of the art of medicine. He is in the most formative period of his existence, keen to learn, wide-eyed and enthusiastic, trusting and hopeful, relying tremendously on the guidance of his chiefs, so much so that it places a great responsibility on them the significance of which, I fear, none too frequently bear in mind. "The student acquires a

sense for scientific work only in his student days, and the degree of scientific training and interest imparted to the young man in the medical school (*and hospital*) determines his intellectual level for the rest of his life"¹ And so we should fully appreciate our obligations as teachers, realizing that our role is hardly second in importance to that of the men who have guided the student during his college years and that it is our privilege perhaps more than it was theirs, by our precept and example, by our opportunity to stimulate his latent enthusiasm, by the inspiration of our own personalities to afford him in the most important phase of his professional career that guidance so important in molding and shaping and directing his destinies to the end that his life becomes a failure or a success largely as we choose to make it

Special Articles

THE INDISPENSABLE USES OF NARCOTICS

IN OBSTETRICS AND GYNECOLOGY*

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From time immemorial narcotics have been used to assuage the pains of childbirth, and in more recent times they have been exhibited for sundry complications of pregnancy and the puerperium. Human beings have attempted to lift the curse placed on Eve at the so-called beginning of the human race, ever since that time, and it is not necessary to cast doubt on the authenticity of the story to justify the present use of narcotics in obstetrics.

NARCOTICS IN OBSTETRICS

Sedatives are used during pregnancy, labor and the puerperium. During pregnancy the most common indication for narcotic medicines is the prevention of abortion. Rest in bed, combined with morphine or other preparations of opium, has saved numerous pregnancies from disaster. A combination of chloral with bromides has been used, but it is not nearly as effective. When an acute abdominal condition develops during gestation, or an operation is performed at this time, narcotics are particularly indispensable, to allay uterine action which might expel the ovum.

In the treatment of hyperemesis gravidarum, morphine is occasionally used to stop vomiting for a brief period, in order to allow the intake of food. Tincture of opium is often added to nutrient enemata to allay rectal spasm and aid retention. Cocaine is still used to allay vomiting and permit feeding.

Certain cases of chorea gravidarum do not respond to the usual remedies, and a combination of morphine and scopolamine may have to be exhibited for temporary sedation. The same may be said of the psychoses.

¹ Dean Lewis

These articles are prepared under a plan of cooperation between the American Medical Association, the Committee on Drug Addiction and the Division of Medical Sciences of the National Research Council, and the Division of Mental Hygiene of the United States Public Health Service. Their object is to reduce the legitimate use of addiction drugs to a minimum by replacement wherever possible with other remedies that will accomplish the desired result. The physicians of the United States are the essential group in any such attempt and it is hoped that these articles will be useful to them in their practice. The funds for this work have been donated to the National Research Council by the Bureau of Social Hygiene, Inc.

Pregnancy does not contraindicate the exhibition of narcotics for any purpose that demands them. The child does not suffer except from an overdose that would endanger the mother. Cases are on record in which, it is said, the excessive unwarranted use of morphine during pregnancy has shown effects on the child, but they are too rare for serious consideration. Chloral and chloroform pass over to the fetus but their action need not be considered as important during pregnancy. The barbituric acid preparations have widespread application in obstetrics and thus far no one has shown any bad results in doses safe for the mother, although they rarely procure enough sedative effect.

During labor, opium preparations cannot be dispensed with. Chloral, barbituric acid compounds and other substitutes do not meet the needs of the parturient woman. Our recent experience with sodium amytal in painful labor has been disappointing, and several babies were born narcotized. The pain element varies much in individuals, indeed, not a few labors particularly in multiparous women, may be conducted with only obstetric inhalation analgesia in the second stage.

There is no question in the minds of experienced observers that the routine administration of narcotics in labor, as demanded by hysterical magazine writers and as practiced by many overenthusiastic accoucheurs, has resulted in and is yet causing numerous deaths of newborn children and also a certain number of maternal deaths. On the other hand there is a real and scientifically proved ground for the scientific administration of narcotics during labor. The process of human childbirth is commonly pronounced to be a natural harmless function, but accoucheurs know that, while this may have been the original intention of nature, the modern woman can seldom be brought through the ordeal without some physical damage to her body, that often she cannot be got through alive, and that frequently the shock to her nervous system leaves permanent injury. The pains of labor may be natural but are they physiologic? Are they harmless? Everywhere else in the human organism, pain is a symptom of disease. At any rate, the modern woman cannot stand pain. It leaves its mark, and therefore it is the bounden duty of the obstetrician to reduce the suffering as much as possible within the limits of safety of mother and child.

Also the child is to be considered. The uterine contractions exert a pressure on it that not seldom reaches 45 pounds to the square inch. Its bones have been broken and even its head crushed in by the action of the uterus alone. Compression of the placenta resulting in asphyxia in utero is a minor effect though sometimes fatal. Narcotics, by moderating the force of the contractions and calming their tumult, may relieve the baby from injurious pressure and preserve its life and integrity.

Labor is often protracted, especially in primiparas, and exhaustion of the mother may delay the process so long that infection may creep in. Here a hot pack, and a rectal infusion of chloral with a hypodermic of some opium preparation, will rest the uterus as well as the nervous system, and preserve the heart and the life forces of the patient. When she awakes, the activity of the uterus is resumed with new energy and I have often observed that a stubborn cervix ("rigid os") has become supple and dilatable in the meantime.

The mind of the parturient requires treatment during labor, indeed under few other conditions is the patient more susceptible to suggestion. A sympathetic accou-

cheur with "an understanding heart" may often do more with mental suggestion than can be done with drugs, and he always can increase the potency of his prescription if he adds suggestive influence to the drugs he administers. Sometimes he may exert an almost hypnotic influence on the woman and abolish the memory of pain entirely or nearly so. These cases are of course the exceptions.

Only in the rarest cases is the pain of the second stage bearable by a courageous woman, and in the first stage narcotics are needed as a rule. It is not possible to abolish all pain, but one can and should mitigate it.

Narcotics are said to lengthen the first stage of labor and to affect the child adversely if given in the second stage. Both statements are true, but only when the drugs are improperly administered. Given at the right time and in proper dosage, the child is not endangered and the mother is made more resistant to exhaustion, acidosis, shock and postpartum hemorrhage. By preserving her strength in a prolonged first stage, narcotics actually shorten the second and forestall difficulties in the third. Even the puerperium is more smooth and convalescence more rapid and infection less likely, since the woman's immunities have been preserved.

There are few occasions for the use of narcotics in the lying-in period. After-pains are almost never so severe as to require them, the barbituric acid preparations sufficing to procure sufficient relief. A combination of codeine and acetylsalicylic acid is rarely found necessary. Naturally, any complication of the puerperium that would require narcotics for its own sake must be so treated at this time. Ordinary cases of wakefulness are well handled with a barbiturate. In the sleeplessness that is an obstinate condition in cases of puerperal infection there is no drug as efficacious as morphine, and in the diarrheas of sepsis it must also be used. To rest the bowels in cases of peritonitis I give it occasionally, it affords the patient much relief.

SPECIAL INDICATIONS FOR NARCOTICS

Eclampsia—Morphine is the obstetrician's sheet anchor in this disease. Sodium amytal, magnesium sulphate, chloral and bromides may occasionally be used either alone or as adjuvants, but morphine can best be relied on to make an impression on the frequency or the severity of the convulsions. It saves many lives.

Placenta Praevia—Occasionally the uterine contractions of labor with placenta praevia are strong and separate the placenta, causing free bleeding. While preparations for definitive hemostasis are being made, a hypodermic of morphine will calm the uterus, reduce the bleeding and soothe the patient, allaying her apprehensions and removing the fear of impending death. The same may be said, but with greater emphasis, in cases of abruptio placentae.

As an Aid to General Anesthesia—A narcotic may sometimes replace a general anesthetic. Many minor obstetric operations can be done under morphine and scopolamine, or morphine, scopolamine and a little local anesthesia with procaine hydrochloride. Cesarean sections and even Porro cesarean operations are done under local anesthesia supplemented by morphine and scopolamine. A dose of morphine will reduce the amount of ether necessary for an operation and will thus eliminate such hazards as nephritis and pneumonia.

Postpartum Hemorrhage—For the restlessness and exhaustion attendant on a severe postpartum bleeding, or bleeding from any cause, morphine is the sovereign

remedy, and for shock, following difficult, forceful obstetric deliveries it likewise is most useful.

In cases of incarceration of the placenta post partum, morphine is given for its paralyzant effect on the uterine spasm. After this subsides, the normal uterine contractions expel the placenta into the vagina, from which it can be safely removed.

NARCOTICS IN GYNECOLOGY

In general, what is said of the use of morphine and its derivatives in surgery applies equally well to the practice of gynecology.

Cocaine is not used much in obstetrics or gynecology, but procaine hydrochloride has extensive employment in both specialties. Morphine as a general sedative in gynecologic operations done under local or spinal anesthesia may be given much more extensively and in larger doses than in obstetrics, as there is no baby to be looked after.

At the present time various barbituric acid preparations, tribrom-ethanol and other drugs are being used to supplant morphine as the preliminary hypnotic before operations with a general anesthetic, but their success is somewhat dubious and there will always be cases that will not respond to them at all. Here, however, much progress is being made. Care is to be observed, as deaths have already been reported from tribrom-ethanol and barbituric compounds.

Most gynecologic operations can be done under local anesthesia with morphine, or under spinal anesthesia with or without morphine, and when a general anesthetic is given the morphine reduces the amount needful and obviates to an appreciable extent the incidence of post-operative complications affecting the lungs, the kidneys and the nerves. Perhaps the newer hypnotics can supplant morphine here.

For the postoperative pain and abdominal symptoms morphine is indispensable, and the narcotic often saves life by its sedative influence on the bowel. In a few milder conditions the hypnotic drugs may suffice. To bind up the bowels following plastic operations in the pelvis, opium preparations are necessary.

In the treatment of chronic gynecologic diseases morphine has only limited uses, in fact, had better be dispensed with if possible. The severe hemorrhages from fibroids and carcinoma require other management; only the acute anemia may need to be combated by narcotics. There is, however, one grand exception to the hesitancy with which narcotics are given to gynecologic patients—that is, cancer. For the woman suffering the pains of incurable cancer, morphine is the great savior, it should be given often and in sufficient dosage.

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Blood Pressure and Hyperthyroidism—The relationship between blood pressure and hyperthyroidism is significant if some views of the present day are true. It is common knowledge that there is an increased pulse pressure in hyperthyroidism. Statements have been made that, if this were continued over a sufficient time, cardiovascular changes and permanent arterial hypertension might ensue. Furthermore it is the belief of some writers that the nontoxic adenomatous goiter can lead to similar changes over a period of years. There has been no adequate survey as far as I am aware to show that either active hyperthyroidism or prolonged but slight overactivity of the thyroid in otherwise clinically nontoxic goiter leads to permanent cardiovascular degeneration, hypertension or cardiac enlargement.—HURVATH, L. M. Blood Pressure Before and After Operation in Hyperthyroidism. *Arch. Int. Med.* February, 1931.

HOSPITAL SERVICE IN THE UNITED STATES

TENTH ANNUAL PRESENTATION OF HOSPITAL DATA BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

Although business and industry were slack in 1930, the total work done by all hospitals in the United States for the year showed an increase over the preceding year. But not all hospitals were equally busy. While governmental and other charitable hospitals were burdened with an unusually large number of patients, those that serve pay patients generally suffered a decrease in patronage. The total of patient-days in all the 6,719

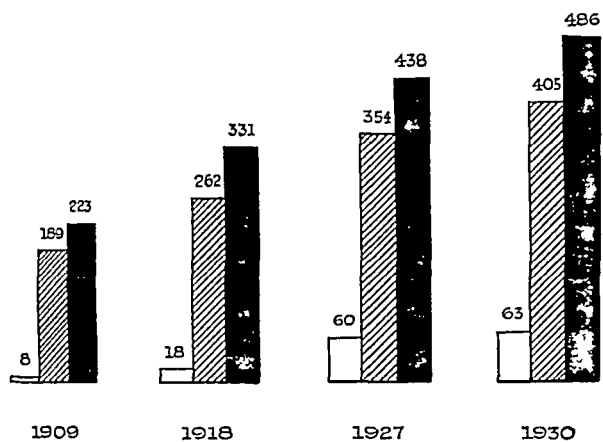


Chart 1—Total beds in hospitals (in thousands of beds) White, federal; shaded, state; black, all other

registered hospitals during their last fiscal year, according to reports received in recent months, amounted to 278,634,430 days. The number of patient-days in all registered hospitals for the preceding year, 1929, was 265,269,590. The increase for 1930, therefore, was 13,364,840 patient-days. Every patient in a hospital during the year 1930 had at least the consolation of not being singularly unfortunate, he was simply one of a daily average of 763,382 persons who were occupying beds in hospitals. The daily average number of patients in hospitals in 1929 was 726,766, there was, therefore, a growth in the daily average number of patients of 36,616.

During the year 1930 the number of beds in all types of hospitals rose from 907,133 to 955,869, an increase of 48,736 beds. These figures do not include bassinets. The total bassinets in all types of hospitals in the United States rose during the year 1930 from 47,939 to 49,584, a growth of 1,645 bassinets. Our 1930 census of patients does not include new-born infants, but if each bassinet represented the same number of births as last year, the number of births in hospitals was approximately 644,592.

The best available statistics of hospitals grouped according to ownership or control and according to the type of service rendered are shown by states in tables 1 and 2. Much information also is given in the several charts and smaller tables. For data regarding individual hospitals, the reader is referred to the list on page 1023 of this issue. That list is printed in two sections for each state. The first section is headed "Hospitals and Sanatoriums," and the second "Related Institutions." This classification is explained on page 1022.

PROPORTION OF HOSPITAL BEDS OCCUPIED

It is to be expected that a certain proportion of beds in hospitals will be idle because of irregularity in the prevalence of sickness and injuries, seasonal changes, interference for repairs, and reserves for emergencies. For the year 1930, especially, there was an unusual slump in the patronage of hospitals maintained by non-governmental agencies. Following is a summary of the daily average number of unoccupied beds in the 6,719 registered hospitals for their last fiscal year as compared with the preceding year.

	Unoccupied Beds (Average)	
	1929	1930
(I) According to Ownership or Control		
Federal	13,868	13,082
State	21,664	2,070
County	19,025	13,086
City	14,688	15,184
City county	2,807	2,607
Church	37,783	41,684
Fraternities	1,656	1,827
Industrial	3,107	2,144
Individual or partnership	17,373	18,609
Independent associations	54,794	58,233
Total unoccupied beds all hospitals	180,367	197,487
(II) According to Type of Service		
General	123,023	131,223
Nervous and mental	18,079	27,877
Tuberculosis	10,603	9,468
Maternity	2,022	2,401
Industrial	3,150	3,229
Convalescent and rest	1,886	2,340
Isolation	4,741	5,115
Children's	1,807	1,841
Eye, ear, nose and throat	1,783	1,269
Orthopedic	1,110	1,040
Skin and cancer	78	72
Hospital departments of institutions	9,148	9,477
All other hospitals	1,911	1,631
Total unoccupied beds all hospitals	180,367	197,487

HOSPITALS ACCORDING TO TYPE OF SERVICE

The number of general hospitals far exceeds the number of any other type. There were 4,302 general hospitals in 1930, as compared with 4,268 in the pre-

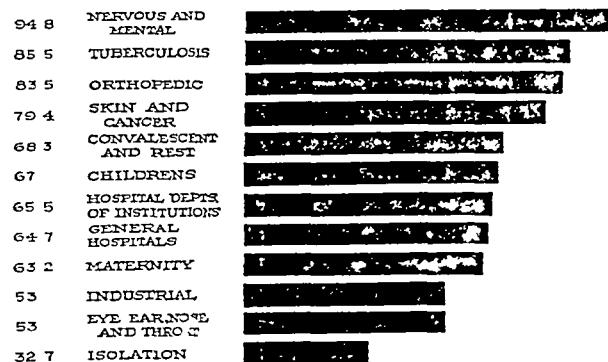


Chart 2—Percentage of beds occupied in hospitals according to type of service 1930

ceding year. In 1930 the bed capacity in general hospitals increased from 357,034 to 371,609. The increase in the number of patients has been proportionately less than the increase in capacity, since the average number of patients for 1929 was 234,009, whereas in 1930 it

TABLE 1—Number and Capacity of Hospitals According to Agencies Owning or in Control

Marginal Number	State	Federal			State			County			City			City and County			Total Government Owned			Marginal Number		
		Hospitals	Beds	Average Patients	Hospitals	Beds	Average Patients	Hospitals	Beds	Average Patients	Hospitals	Beds	Average Patients	Hospitals	Beds	Average Patients	Hospitals	Beds	Average Patients			
1	Alabama	4	900	621	10	4 649	4 408	6	511	44	367	259	24	1	70	1	26	6 580	91	5 699	1	
2	Arizona	20	1 732	28	3 874	3	874	9	337	14	244	221	42	2	221	2	32	3 013	42	2 221	2	
3	Arkansas	2	1 040	976	6	3 543	3 266	3	253	4	170	108	23	14	1 083	23	34	3 013	23	4 630	3	
4	California	21	6 163	13	4 702	17	18 565	62	10 319	345	8 773	129	33	5	1 534	33	114	37 410	440	32 714	4	
5	Colorado	4	2 381	10	1 595	10	3 513	4	171	19	115	17	20	2	563	20	21	6 610	77	5 263	5	
6	Connecticut	7	28	5	7 837	14	7 567	7 033	6	730	10	487	457	6	20	8 297	10	7 642	10	7 642	6	
7	Delaware	1	28	5	7 837	4	1 041	6	730	10	487	457	6	20	8 297	10	7 642	10	7 642	7	7 642	7
8	District of Columbia	3	7 373	46	6 570	2	252	2	403	32	283	46	2	1	70	1	12	8 246	98	7 176	8	
9	Florida	4	692	12	4 242	7	4 060	6	403	32	283	46	2	1	70	1	26	6 580	91	5 699	9	
10	Georgia	8	1 493	12	5 634	7	5 634	1	65	12	30	63	3	7	1 129	88	29	9 193	175	8 261	10	
11	Idaho	4	420	343	1 153	6	1 213	3	91	16	50	2	3	2	78	17	17	1 844	34	1 796	11	
12	Illinois	10	4 163	4	2 267	24	29 840	28	6 911	170	4 034	1 910	112	3	112	112	86	43 719	352	38 273	12	
13	Indiana	3	1 501	1 217	11 376	35	10 320	35	2 193	140	1 487	1 487	1	3	26	26	69	15 721	255	13 649	13	
14	Iowa	3	533	725	18 106	16	10 661	13	481	43	682	71	43	2	26	26	43	11 983	140	10 597	14	
15	Kansas	5	492	11	6 088	10	6 202	15	473	26	118	15	3	2	26	26	22	7 494	84	6 733	15	
16	Kentucky	4	546	470	5 493	4	6 408	7	420	37	243	63	16	2	54	16	31	8 653	140	7 532	16	
17	Louisiana	3	1 271	1 073	7 014	6	6 614	1	100	97	73	12	1	1	120	12	12	8 431	51	7 774	17	
18	Maine	3	418	262	3 293	6	3 293	3	133	18	63	13	1	1	120	12	12	8 431	51	7 774	18	
19	Maryland	9	1 708	1 368	16 646	25	5 318	6	254	33	247	63	1	1	120	12	12	8 431	51	7 774	19	
20	Massachusetts	8	2 263	1 946	30 287	40	27 183	6	813	29	6 36	1015	43	2	43	6	80	29 739	423	23 442	20	
21	Michigan	5	809	727	20 156	39	44 119	24	7 283	29	6 36	1015	43	2	43	6	91	27 934	438	24 773	21	
22	Minnesota	8	1 351	11	12 692	30	11 133	10	1 648	14	1 362	637	70	4	1 167	70	59	17 259	206	15 309	22	
23	Mississippi	2	447	2	446	4	4 639	4	266	24	146	106	6	4	107	7	14	5 286	47	4 960	23	
24	Missouri	6	1 137	676	8 423	8	8 112	5	266	24	146	106	6	4	107	7	37	16 813	199	14 978	24	
25	Montana	1	461	1	1 710	1	1 710	5	216	8	173	7	2	1	30	30	17	2 403	23	2 169	25	
26	Nebraska	5	194	2	3 312	5	3 312	2	187	10	170	2	2	24	3 857	43	24	2 403	23	2 169	26	
27	Nevada	3	101	73	2 929	6	4 603	11	346	16	217	6572	11	16	749	16	16	749	16	749	27	
28	New Hampshire	1	202	44	2 328	10	10 507	2	7 849	31	6 572	140	176	50	20 981	171	13	9 076	37	2 609	28	
29	New Jersey	3	95	44	4 897	5	6 31	1	17	17	71	176	176	50	20 981	171	13	9 076	37	2 609	29	
30	New Mexico	11	1 190	11	899	4	897	3	203	22	162	131	131	6	541	32	16	20 981	171	18 713	30	
31	New York	22	5 702	10	4 992	10	6 833	38	61 470	2	5 921	14 461	14 461	6	541	32	16	20 981	171	18 713	31	
32	North Carolina	3	784	12	652	10	6 833	11	775	18	612	131	131	6	541	32	16	20 981	171	18 713	32	
33	North Dakota	5	183	4	103	4	2 459	2	103	5	74	8	8	2	122	16	2	20 981	171	18 713	33	
34	Ohio	5	1 002	1 469	21 447	21	27 447	23	2 311	42	1 928	9 513	9 513	76	31 382	316	76	31 382	316	29 397	34	
35	Oklahoma	10	943	20	728	15	7 167	23	2 311	42	1 928	9 513	9 513	76	31 382	316	76	31 382	316	29 397	35	
36	Oregon	4	666	2	5 702	10	4 992	2	103	5	74	8	8	2	122	16	2	20 981	171	18 713	36	
37	Pennsylvania	5	1 363	1 232	4 211	22	5 869	23	2 311	42	1 928	9 513	9 513	76	31 382	316	76	31 382	316	29 397	37	
38	Rhode Island	2	245	230	3 949	12	3 949	8	483	37	298	123	123	3	3 96	1	3	43 300	253	3 769	38	
39	South Carolina	9	890	15	736	4	2 94	1	17	1	10	78	23	1	26	23	10	4 435	12	4 086	39	
40	South Dakota	3	1 091	940	4 378	4	4 378	7	1 698	2	1 628	11	11	1	26	23	19	4 462	47	3 841	40	
41	Tennessee	11	1 667	24	1 339	16	12 649	13	532	42	321	487	487	4	562	31	15	3 318	49	2 913	41	
42	Texas	2	66	2	3 961	3	3 961	4	245	23	172	172	172	12	1 542	89	60	8 716	116	7 004	42	
43	Utah	1	60	1	1 103	2	1 103	2	50	6	46	10	10	10	1 542	89	60	8 716	116	7 004	43	
44	Vermont	1	60	1	1 103	2	1 103	2	50	6	46	10	10	10	1 542	89	60	8 716	116	7 004	44	
45	Virginia	3	2 062	3	1 490	17	9 123	9	1 198	26	22	22	22	1	30	30	9	1 486	7	1 200	45	
46	Washington	13	1 979	4	1 301	11	6 146	4	217	13	142	142	142	1	30	30	17	9 428	40	8 502	46	
47	West Virginia	4	1 192	3	966	14	4 937	58	11 048	88	9 513	9 513	9 513	21	1 041	44	21	1 041	44	4 289	47	
48	Wisconsin	3	573	4	495	4	495	14	907	42	127	241	241	90	17 426	156	90	17 426	156	15 100	48	
49	Wyoming	3	573	4	495	4	495	14	907	42	127	241	241	90	17 426	156	90	17 426	156	15 100	49	
50	Totals	288	63 581	274	50 490	681	40 309	503	73 615	1 498	60 729	17 850	17 850	74	34 177	197	1 812	619 726	6 303	5 677	50	
51	(1920)	292	59 991	229	40 033	618	386 706	487	6 619	1 785	52 904	19 440	19 440	81	34 177	197	1 812	619 726	6 303	5 677	51	
52	(1923)	291	67 165	117	49 137	603	369 740	489	6 619	1 785	52 904	19 440	19 440	81	34 177	197	1 812	619 726	6 303	5 677	52	
53	(1927)	301	60 444	117	49 137	592	351 786	480	58 907	1 997	47 101	10 509	10 509	70	34 177	197	1 812	619 726	6 303	5 677	53	

TABLE 1.—Number and Capacity of Hospitals According to Agencies Owning or in Control—Continued

Marshall Number	State	Church			Fraternal			Industrial			Individual or Partnership			Independent			Total Nongovernment			Grand Total—All Hospitals		
		Hospitals	Beds	Average Patients	Hospitals	Beds	Average Patients	Hospitals	Beds	Average Patients	Hospitals	Beds	Average Patients	Hospitals	Beds	Average Patients	Hospitals	Beds	Average Patients	Hospitals	Beds	Average Patients
1	Alabama	10	760	100	430	1	760	100	430	1	760	100	430	1	760	100	430	10	760	100	430	
2	Arizona	11	717	80	430	1	717	80	430	1	717	80	430	1	717	80	430	11	717	80	430	
3	Arkansas	0	487	793	300	0	487	793	300	0	487	793	300	0	487	793	300	0	487	793	300	
4	California	0	487	793	300	0	487	793	300	0	487	793	300	0	487	793	300	0	487	793	300	
5	Colorado	0	2,612	271	1,647	1	2,612	271	1,647	1	2,612	271	1,647	1	2,612	271	1,647	0	2,612	271	1,647	
6	Connecticut	0	11	189	85	0	11	189	85	0	11	189	85	0	11	189	85	0	11	189	85	
7	Delaware	1	7	14	0	1	7	14	0	1	7	14	0	1	7	14	0	1	7	14	0	
8	Dist. of Columbia	5	6	2	111	384	5	6	2	111	384	5	6	2	111	384	5	6	2	111	384	
9	Florida	5	1	8	0	6	6	9	32	0	6	6	9	32	0	6	6	9	32	0	6	
10	Georgia	6	6	6	9	32	6	6	6	9	32	6	6	6	9	32	6	6	6	9	32	
11	Idaho	10	611	86	3	0	611	86	3	0	611	86	3	0	611	86	3	10	611	86	3	
12	Illinois	11	11	1748	720	0	11	1748	720	0	11	1748	720	0	11	1748	720	11	1748	720	0	
13	Indiana	11	4,093	109	101	0	4,093	109	101	0	4,093	109	101	0	4,093	109	101	11	4,093	109	101	
14	Iowa	1	4,011	1,0	501	2	152	112	3	170	2	152	112	3	170	2	152	1	4,011	1,0	501	
15	Kansas	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
16	Kentucky	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
17	Louisiana	1	1,109	161	84	0	1,109	161	84	0	1,109	161	84	0	1,109	161	84	1	1,109	161	84	
18	Maine	5	313	43	0	0	313	43	0	0	313	43	0	0	313	43	0	5	313	43	0	
19	Marland	11	1,211	177	1,100	0	1,211	177	1,100	0	1,211	177	1,100	0	1,211	177	1,100	11	1,211	177	1,100	
20	Massachusetts	1	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	1	1	1	0	
21	Michigan	41	1,117	606	214	0	1,117	606	214	0	1,117	606	214	0	1,117	606	214	41	1,117	606	214	
22	Minnesota	1	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	1	1	1	0	
23	Mississippi	1	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	1	1	1	0	
24	Montana	1	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	1	1	1	0	
25	Nebraska	1	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	1	1	1	0	
26	Nevada	1	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	1	1	1	0	
27	New Hampshire	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
28	New Jersey	13	1	1	1	0	13	1	1	0	13	1	1	0	13	1	1	13	1	1	0	
29	New Mexico	1	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	1	1	1	0	
30	New York	1	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	1	1	1	0	
31	North Carolina	1	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	1	1	1	0	
32	North Dakota	1	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	1	1	1	0	
33	Ohio	1	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	1	1	1	0	
34	Oklahoma	1	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	1	1	1	0	
35	Oregon	1	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	1	1	1	0	
36	Rhode Island	1	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	1	1	1	0	
37	South Carolina	1	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	1	1	1	0	
38	South Dakota	1	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	1	1	1	0	
39	Tennessee	1	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	1	1	1	0	
40	Texas	1	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	1	1	1	0	
41	Utah	1	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	1	1	1	0	
42	Vermont	1	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	1	1	1	0	
43	Virginia	1	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	1	1	1	0	
44	Washington	1	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	1	1	1	0	
45	West Virginia	1	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	1	1	1	0	
46	Wisconsin	1	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	1	1	1	0	
47	Wyoming	1	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	1	1	1	0	
48	Y. S. S.	1	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	1	1	1	0	
49	Y. S. S.	1	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	1	1	1	0	
50	Y. S. S.	1	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	1	1	1	0	
51	Y. S. S.	1	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	1	1	1	0	
52	Y. S. S.	1	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	1	1	1	0	
53	Y. S. S.	1	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	1	1	1	0	

TABLE 2—Number and Capacity of Hospitals According to Types of Service

Marginal Number	State	General			Nervous and Mental			Tuberculosis			Maternity			Industrial			Convalescent and Rest			Isolation		
		Number of Hospitals	Beds	Average Patients	Number of Hospitals	Beds	Patients	Number of Hospitals	Beds	Average Patients	Number of Hospitals	Beds	Average Patients	Number of Hospitals	Beds	Average Patients	Number of Hospitals	Beds	Average Patients	Number of Hospitals	Beds	Average Patients
1	Alabama	72	4,001	378	2,323	4	4,450	4,344	188	244	1	40	30	40	312	41	234	1	9	8	60	1
2	Arizona	33	2,335	143	1,359	1	826	753	24	1,166	1	40	30	40	312	41	234	1	9	8	60	1
3	Arkansas	39	2,965	255	1,457	2	3,624	3,355	1	317	1	40	30	40	312	41	234	1	9	8	60	1
4	California	262	25,281	2,401	17,375	26	19,394	18,437	22	2,973	16	37	32	233	21	47	41	541	18	621	237	3
5	Colorado	71	6,210	495	3,911	9	3,776	3,276	16	1,971	2	35	20	16	40	21	541	184	7	125	100	33
6	Connecticut	41	3,391	884	3,616	15	7,464	7,049	8	1,303	1	10	10	3	4	40	18	184	7	125	250	6
7	Delaware	10	631	169	410	2	945	837	2	96	2	163	99	61	1	40	6	4	2	30	350	81
8	District of Columbia	16	4,890	368	3,264	3	4,617	4,423	2	260	4	163	99	61	1	40	6	4	2	30	350	81
9	Florida	67	4,890	452	1,989	4	4,177	4,010	4	41	4	163	99	61	1	40	6	4	2	30	350	81
10	Georgia	84	5,112	483	2,959	7	6,092	6,074	2	622	2	42	4	18	2	137	79	79	1	40	350	81
11	Idaho	49	4,672	214	866	3	1,140	1,126	1	165	1	40	30	40	7	40	25	25	7	209	100	11
12	Illinois	220	28,750	3,735	18,328	28	20,301	28,891	27	7,467	6	40	30	40	7	40	25	25	7	209	100	11
13	Indiana	96	7,797	1,026	4,012	17	11,914	11,077	8	1,160	1	40	30	40	7	40	25	25	7	209	100	11
14	Iowa	129	6,840	600	2,633	13	9,486	9,293	3	1,160	1	40	30	40	7	40	25	25	7	209	100	11
15	Kansas	102	4,876	690	2,633	12	5,773	5,169	3	1,160	1	40	30	40	7	40	25	25	7	209	100	11
16	Kentucky	76	4,590	401	2,494	11	6,432	6,037	5	1,004	1	10	6	3	8	273	17	105	1	10	100	11
17	Louisiana	48	4,637	338	4,064	5	9,014	4,904	2	1,460	1	10	6	3	8	273	17	105	1	10	100	11
18	Maine	32	2,416	761	1,519	4	2,873	2,825	4	480	4	18	13	20	3	175	11	92	1	10	100	11
19	Maryland	169	18,808	2,617	13,563	18	7,727	6,801	9	1,241	11	184	40	209	2	70	12	10	1	10	100	11
20	Massachusetts	150	18,827	1,727	10,730	17	16,546	16,337	8	2,474	17	184	40	209	2	70	12	10	1	10	100	11
21	Michigan	161	10,111	1,363	6,371	13	11,255	10,893	17	2,407	3	187	110	120	2	40	8	24	1	10	100	11
22	Minnesota	50	2,744	259	1,354	4	4,065	4,115	2	324	1	25	6	8	2	106	10	49	1	10	100	11
23	Mississippi	107	10,085	962	6,450	19	12,458	11,917	7	1,426	6	348	6	201	4	46	26	26	1	10	100	11
24	Missouri	57	9,001	377	1,092	1	1,520	1,463	1	1,463	1	18	6	7	1	161	10	105	1	10	100	11
25	Montana	89	4,104	598	2,497	5	4,830	4,446	1	1,463	2	29	62	15	4	50	9	40	1	10	100	11
26	Nebraska	33	1,917	310	1,141	2	2,240	2,202	2	202	1	22	14	8	4	50	9	40	1	10	100	11
27	Nevada	86	11,575	1,720	8,162	20	15,011	14,425	15	2,837	3	176	35	48	1	10	6	10	1	10	100	11
28	New Hampshire	20	1,028	107	547	2	765	607	12	1,160	1	174	142	118	1	10	6	10	1	10	100	11
29	New Jersey	320	40,065	5,769	37,659	9	66,336	60,003	67	9,744	22	174	142	118	1	10	6	10	1	10	100	11
30	New Mexico	101	4,428	648	2,800	9	6,321	5,499	30	2,348	1	6	20	2	1	10	6	10	1	10	100	11
31	New York	159	16,334	2,162	10,772	27	23,049	22,466	16	2,415	13	478	372	210	2	31	1	6	1	10	100	11
32	North Carolina	44	2,168	328	1,203	3	2,797	2,211	1	210	1	26	4	10	2	10	6	10	1	10	100	11
33	North Dakota	101	4,631	311	2,346	3	6,065	5,293	16	2,415	13	478	372	210	2	31	1	6	1	10	100	11
34	Ohio	227	30,631	3,741	20,779	42	26,326	23,550	22	4,093	1	812	387	331	3	125	14	9	1	10	100	11
35	Oklahoma	50	2,902	242	1,507	2	3,291	2,641	1	480	1	10	10	10	2	10	6	10	1	10	100	11
36	Oregon	67	5,147	445	2,325	11	2,236	1,726	7	425	1	10	10	10	2	10	6	10	1	10	100	11
37	Pennsylvania	287	36,713	4,471	23,466	3	6,065	5,293	16	2,415	13	478	372	210	2	31	1	6	1	10	100	11
38	Rhode Island	18	2,934	178	2,170	3	2,792	2,641	1	480	1	10	10	10	2	10	6	10	1	10	100	11
39	South Carolina	48	2,942	242	1,507	2	3,291	2,641	1	480	1	10	10	10	2	10	6	10	1	10	100	11
40	South Dakota	56	2,902	242	1,507	2	3,291	2,641	1	480	1	10	10	10	2	10	6	10	1	10	100	11
41	Tennessee	67	5,147	445	2,325	11	2,236	1,726	7	425	1	10	10	10	2	10	6	10	1	10	100	11
42	Texas	221	11,825	1,231	6,630	14	11,714	10,828	19	2,690	1	10	10	10	2	10	6	10	1	10	100	11
43	Utah	27	1,835	219	950	2	940	925	3	147	1	17	12	7	1	10	6	10	1	10	100	11
44	Vermont	21	1,073	164	692	4	1,795	1,726	3	147	1	17	12	7	1	10	6	10	1	10	100	11
45	Virginia	76	8,846	801	3,337	9	8,014	7,550	6	966	1	6	6	2	1	10	6	10	1	10	100	11
46	Washington	78	6,607	860	4,107	9	6,405	6,021	10	1,297	1	6	6	2	1	10	6	10	1	10	100	11
47	West Virginia	60	4,193	392	2,511	4	3,727	3,390	7	742	1	10	10	10	2	10	6	10	1	10	100	11
48	Wisconsin	124	10,217	1,474	6,168	48	13,175	12,466	22	1,466	1	50	15	25	2	10	6	10	1	10	100	11
49	Wyoming	25	937	122	402	3	1,100	1,066	1	309	1	50	15	25	2	10	6	10	1	10	100	11
50	Totals	4,392	371,699	42,911	240,384	61	437,919	52,411,042	915	61,640	18	50,372	4,456	4,196	157	6,875	474	3,610	162	7,374	77	5,034
51	(1920)	4,208	367,094	42,715	234,069	61	414,386	43,303,407	915	61,640	18	50,372	4,456	4,196	157	6,875	474	3,610	162	7,374	77	5,034
52	(1923)	4,201	363,337	38,530	228,084	61	414,386	43,303,407	915	61,640	18	50,372	4,456	4,196	157	6,875	474	3,610	162	7,374	77	5,034
53	(1927)	4,322	345,304	38,530	228,084	61	414,386	43,303,407	915	61,640	18	50,372	4,456	4,196	157	6,875	474	3,610	162	7,374	77	5,034

TABLE 2—Number and Capacity of Hospitals According to Type of Service—Continued

[illegible]

was 240,384. Of the beds in general hospitals, 64.7 per cent were occupied on the average in 1930, compared with 65.5 per cent in 1929.

Statistics given in these columns do not include newborn babies except when it is clearly stated that they are included. The number of bassinets in general hospitals increased from 42,715 to 43,941. This gives

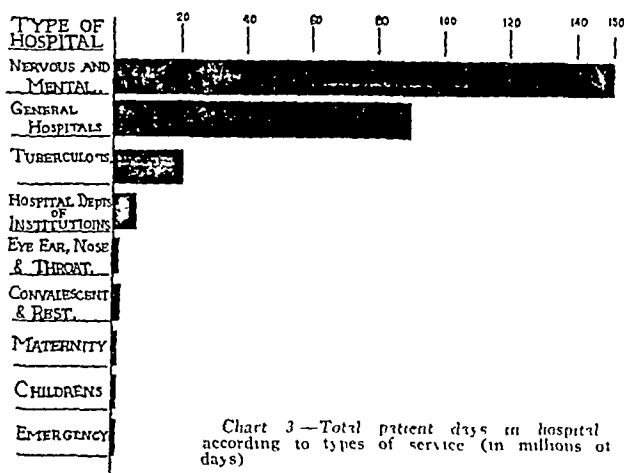


Chart 3—Total patient days in hospital according to types of service (in millions of days)

some idea of the importance of the maternity service of general hospitals, which have about nine times as many bassinets as all other types of institutions combined. The relative importance of general hospitals is conceded because of their comprehensive service for the sick and injured in a community and the large part they play in the training of residents, interns, medical students and nurses. Patients suffering from nervous and mental diseases, those having tuberculosis, and other special types of patients, are being cared for in general hospitals to an increasing extent.

HOSPITALS FOR NERVOUS AND MENTAL PATIENTS

Last year it was stated in the Hospital Number of THE JOURNAL, regarding the rate of growth of hospitals for nervous and mental patients, that "if the present

TABLE 3—Hospitals for Nervous and Mental Patients in Continental United States Classified According to Ownership or Control

Classification	No. of Hospitals	Rated Capacity	No. of Patients	In-hospital	Out-hospital	Physical Therapy
Federal	21	17,602	16,634	20	20	19
State	229	362,671	347,635	1,275	175	114
County	58	27,000	24,859	7	9	8
City	9	12,301	11,961	7	2	4
Total governmental	317	419,222	400,390	206	206	141
Church	21	3,935	3,527	7	4	5
Industrial	1	20	20	4	0	1
Individual and partnership	127	4,469	3,061	39	0	42
Independent associations	90	9,885	8,035	79	15	46
Total nongovernmental	244	18,317	14,637	80	26	97
Grand total	561	437,539	415,027	286	232	242

rate continues, and there is no apparent reason for thinking it will not, by 1934 we shall have more than one-half million persons in our nervous and mental institutions." The figures for 1930 compared with those of 1929 bear out the prophecy thus far, showing an increase in the average daily census from 395,407 to 415,042, or a net increase of 19,635. At the same

time the total capacity of these institutions increased from 414,386 to 437,919, a net increase in capacity of 23,533. It is interesting to note that 94.8 per cent of the beds available in these institutions were occupied, as compared with 64.7 per cent of the beds in general hospitals.

Hospitals for nervous and mental patients are as a rule much larger than general hospitals. Indeed, although the total number of nervous and mental hospitals is 561, as compared with 4,302 general hospitals, their total capacity exceeds that of general hospitals by 66,310. The average capacities of the various groups of nervous and mental hospitals are

Federal	838.2 beds
State	1,583.8 beds
County	465.5 beds
City	1,367.0 beds
Nongovernmental	75.1 beds

However, if St. Elizabeths Hospital at Washington, D. C., were not considered, the average capacity of the federal group would drop to 651.3, and, if the Philadelphia hospital were not considered, the average capacity of the city group would be 946.

The importance of the 229 state hospitals in their relation to the entire nervous and mental group is apparent. Their number is 40.8 per cent of the total, and they contain 82.8 per cent of all the beds. The great size of these state institutions is made necessary by the fact that most of their patients remain for years.

TABLE 4—Hospitals for Nervous and Mental Patients Showing Distribution in the Various States According to Ownership or Control

State	No. Govt Owned	No. Non Govt Owned	State	No. Govt Owned	No. Non Govt Owned
Arizona	1	0	Oregon	4	0
Montana	1	0	Colorado	4	5
Nevada	1	0	North Carolina	4	5
South Carolina	1	2	Kentucky	4	7
Utah	1	1	Connecticut	4	11
Dist. of Columbia	1	2	Washington	5	3
Arkansas	2	0	Virginia	0	4
Delaware	2	0	Tennessee	6	0
New Hampshire	2	0	Kansas	6	6
New Mexico	2	0	Texas	7	7
North Dakota	2	1	Maryland	7	11
Rhode Island	2	1	Missouri	7	12
Florida	2	2	Iowa	9	4
Vermont	2	0	Minnesota	9	4
Georgia	2	1	California	9	17
Idaho	0	0	Indiana	11	6
South Dakota	2	0	Michigan	12	5
Wyoming	3	0	New Jersey	12	8
Alabama	3	1	Ohio	12	11
Mississippi	0	1	Illinois	13	10
Louisiana	0	2	Massachusetts	18	14
West Virginia	4	0	Pennsylvania	2	19
Nebraska	4	1	New York	28	31
Oklahoma	4	1	Wisconsin	40	8
			Total	317	244

In the nongovernmental or privately owned hospitals, on the other hand, patients usually remain for a relatively short time, and for this reason the nongovernment-owned group serves a much larger patient population than this comparison of capacities indicates.

A consideration of nervous and mental hospitals by states reveals the fact that the government-owned and nongovernment-owned have grown up together. In the six states with one government hospital each there are four nongovernment. In the nine states having four government hospitals each, or a total of thirty-six, there are thirty-three of the nongovernment. The three states having seven government hospitals each a total of twenty-one, have thirty nongovernment

The three states with nine government hospitals each, a total of twenty-seven, have twenty-five nongovernment hospitals. The three states with twelve government hospitals each, a total of thirty-six, have twenty-eight nongovernment hospitals. Such comparisons, with others easily made by reference to an accompanying table, make it clear that in every section of the country so densely populated as to have nervous and mental patients in large numbers, governmental and nongovernmental agencies have both been active in the solution of the problem.

EDUCATIONAL FUNCTIONS OF HOSPITALS FOR
NERVOUS AND MENTAL PATIENTS

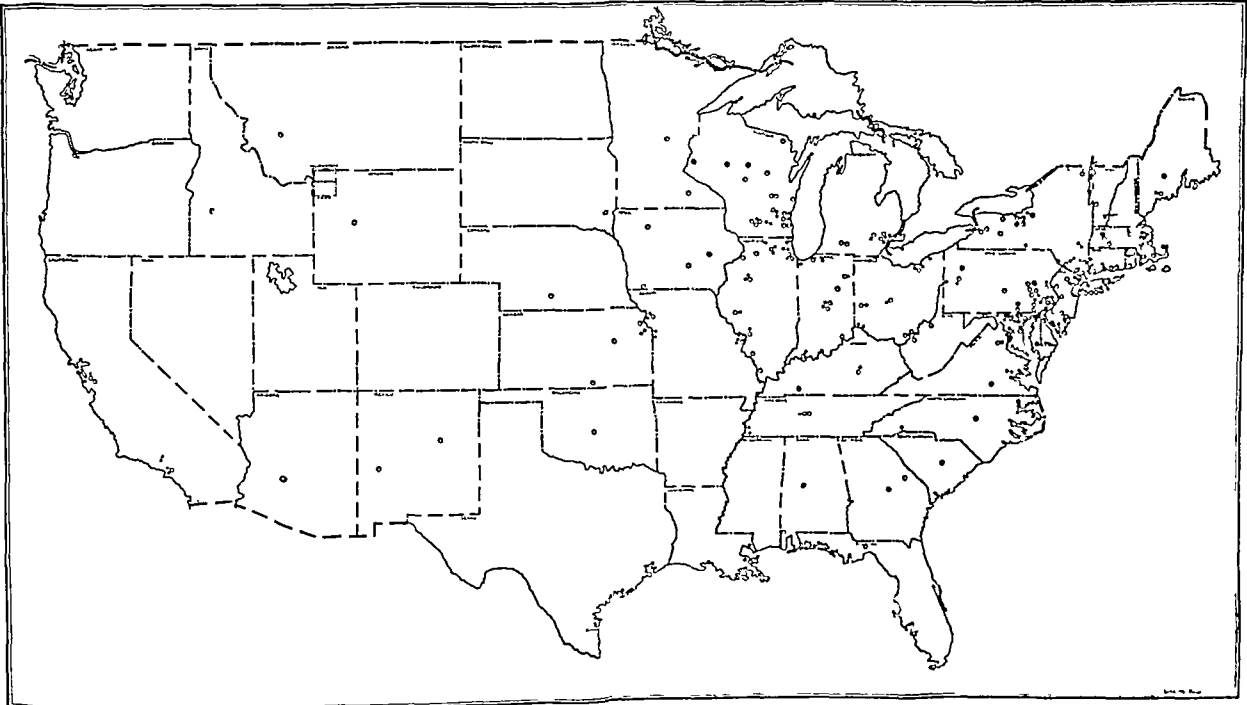
Of the 561 nervous and mental hospitals, 31 are affiliated with medical schools, for teaching purposes. In addition, the Council on Medical Education and Hospitals lists 63 as offering 302 approved residencies in psychiatry. Twenty-six general hospitals also are

studied in this field. The importance of this matter is increased by the fact that only 17 of the 64 four-year medical schools in the United States require of their students as much as 100 hours of psychiatric study.

The increasing medical interest in this group of institutions, until recently thought of as custodial only, has already resulted in changing to a degree their "atmosphere." Clinical laboratories, x-ray equipment, physical and occupational therapy departments and other diagnostic and therapeutic facilities are being added, thus making these institutions places for reconstruction rather than merely for incarceration. An accompanying table shows the extent to which some of these facilities are now provided.

TUBERCULOSIS HOSPITALS

During 1930, tuberculosis hospitals, in which there has been a slight decrease in bed capacity during recent



Map showing location of hospitals for nervous and mental patients in the United States. Government hospitals are marked by a circle and nongovernment hospitals by a star.

TABLE 5—Percentage of Beds Occupied in Hospitals
According to Types of Service

	1929	1930	Difference in Percentage of Beds Occupied
General hospitals	61.5	64.7	0.8 decrease
Nervous and mental	9.7	9.8	0.9 decrease
Tuberculosis	8.7	8.2	2.8 increase
Maternity	6.8	6.2	0.4 increase
Industrial	54.6	3.0	1.6 decrease
Convalescent and rest	70.9	68.3	2.6 decrease
Isolation	3.1	3.7	3.4 decrease
Children	6.9	6.0	1.1 increase
Eye, ear, nose and throat	4.7	4.0	3.3 increase
Orthopedic	5.0	4.4	3.5 increase
Skin and cancer	68.0	70.4	11.4 increase
Hospital departments of institutions	0.0	0.0	0 increase
All other hospitals	0.0	1.0	0 increase
Total hospital	50.1	70.8	0.1 decrease

listed as offering 108 additional approved residencies for the study of this specialty. A wider survey would doubtless reveal a great many other opportunities for

years expanded remarkably, increasing from 61,310 to 65,940. The average number of patients grew from 50,707 for the year 1929, to 56,372 for the year 1930. The proportion of beds occupied in tuberculosis hospitals was 85.5 per cent.

MATERNITY HOSPITALS

Maternity hospitals, used by only one tenth as many maternity patients as general hospitals, increased in number from 146 to 151, in bed capacity from 5,434 to 6,527, and in the average number of patients, not including the babies, from 3,412 to 4,126.

INDUSTRIAL HOSPITALS

Industrial hospitals continued the slight downward trend in bed capacity that has characterized them for the past four years. During 1930 they occupied from 7,004 to 6,875 beds, and from 3,824 to 3,664 in the average census of patients.

CONVALESCENT AND REST

A slight gain took place in the number of institutions for convalescents, from 149 to 162, a rise in bed capacity from 6,474 to 7,374, and an increase in daily average census from 4,588 to 5,034. Their rate of occupancy, amounting to 68.3 per cent of their total capacity, was nearly 4 per cent higher than that of general hospitals.

TABLE 6—Total Patient Days, According to Types of Service

	1927	1929	1930
General hospitals	83,906.60	84,411.98	87,740.160
Nervous and mental	127,028.45	144,323.11	151,410.30
Tuberculosis	18,536.160	18,508.03	20,377.780
Maternity	1,448.67	1,740.380	1,701.990
Emergency (Industrial)	1,314.880	1,311.760	1,700.700
Convalescent and rest	2,030.98	1,674.620	1,837.410
Isolation	1,191.360	917.10	908.50
Children's	1,272.70	1,308.890	1,170.940
Eye, ear, nose and throat	1,482.270	400.00	23.04
Orthopedic	1,626.440	1,740.320	1,754.86
Skin and cancer	223.01	298.110	309.015
Hospital dept. of institutions	4,541.34	6,688.160	6,117.01
All other hospitals	1,657.720	2,234.89	2,550.180
Totals	241,216.680	266,269.590	278,634.430

ISOLATION HOSPITALS

Isolation hospitals, which increased in capacity from 7,422 to 7,608, declined in the total daily average of patients from 2,677 to 2,490. Their rate of occupancy was only 32.7 per cent.

CHILDREN'S HOSPITALS

Reference to the column for children's hospitals in the accompanying table reveals a constancy in the number and bed capacity, but an increase in the daily average census from 3,586 to 3,756.

EYE, EAR, NOSE AND THROAT HOSPITALS

Hospitals devoted to eye, ear, nose and throat, and the orthopedic hospitals, showed a gain in the total capacity and the average number of patients cared for.

SKIN AND CANCER HOSPITALS

While the number of hospitals for malignant diseases, under the title of skin and cancer, decreased slightly, the average census of patients rose from 818 to 1,011.

INSTITUTIONAL HOSPITALS

Hospital departments of institutions, including school infirmaries and prison hospitals for the care of inmates, declined in number from 473 to 460 but increased both in bed capacity and in the number of patients.

HOSPITALS ACCORDING TO OWNERSHIP OR CONTROL

Government-owned hospitals, including federal, state, county, city and city-county institutions, now have a total capacity of 619,726 beds and 6,303 bassinets, as compared with 582,537 beds and 6,062 bassinets one year ago. The daily average of patients in government-owned hospitals increased during the past year from 516,885 to 550,737. Sharing in this enormous expansion in governmental participation, the federal hospitals increased in bed capacity from 59,901 to 63,581, and in average census of patients from 46,033 to 50,499; the state hospitals, from 385,706 to 405,309 in bed capacity and from 364,042 to 380,279 in average number of patients; county hospitals, from 65,619 to 73,615 in bed capacity and from 52,994 to 60,529 in daily census of patients; city hospitals, from 57,128

to 63,064 in bed capacity and from 42,440 to 47,880 patients, while city-county hospitals show a slight decrease from 14,183 to 14,157 in bed capacity but increased from 11,376 to 11,550 patients.

In striking contrast with the foregoing facts, the total figures for all the nongovernmental hospitals, including church, fraternal, industrial, individual and partnership, and independent hospital associations, show only a slight total increase in patronage. Their bed capacity was increased from 324,596 to 336,143, but the increase in patients was only from 209,881 to 212,645; there were, therefore, added 11,547 beds but only 2,764 patients. The church hospitals increased

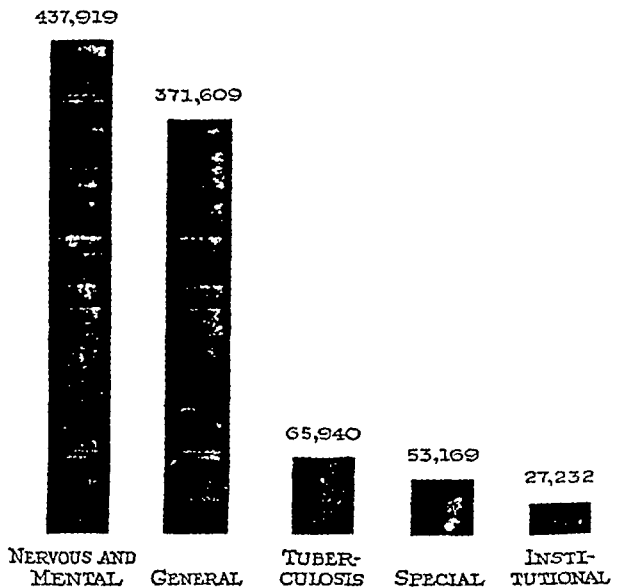


Chart 4—Total bed capacity of hospitals according to types of service 1930

their bed capacity from 113,555 to 116,846 while they suffered a slight loss in total patronage, their average census being 75,770 for 1929 and 75,162 for 1930.

TABLE 7—Increase in Seven Years According to Ownership or Control

	Hospitals		Bed Capacity		Aver. Patients	
	1923	1930	1923	1930	1923	1930
Control						
Federal	220	288	53,869	63,581	34,937	50,499
State	601	581	302,908	405,309	261,840	380,279
County	46	50	46,571	73,615	32,783	60,529
City	41	364	64,599	63,064	42,140	47,880
City and county	3	74	4,701	14,157	3,002	11,550
Total governmental	1,736	1,812	471,948	619,726	374,764	550,737
Church	593	1,017	77,941	116,846	49,046	75,162
Fraternal	97	77	5,013	5,006	3,187	3,779
Industrial	146	146	6,730	6,703	3,070	3,548
Individual	1,762	1,620	45,719	38,537	27,393	19,948
Independent associations	2,193	2,047	149,341	168,431	90,674	110,198
Total nongovernmental	5,094	4,907	293,774	336,143	148,370	212,645
Grand total all hospitals	6,830	6,719	765,722	955,869	523,133	763,382

Hospitals owned by individuals and partnerships similarly increased in their total capacity from 37,977 to 38,557 beds but fell in average census of patients from 20,604 to 19,948. Fraternal hospitals, as a group, made some growth in capacity and nosed out a slight increase in patronage. That large group of hospitals controlled by independent hospital associations, whether incorporated for profit or not for profit, continued their growth, as a group, from a total of 160,971 to 168,431.

beds and from 106,177 to 110,198 in their average census of patients. Hospitals maintained by industries, mainly for employees, fell off considerably both in capacity and in the average number of patients. The

TABLE 8—Percentage of Beds Occupied in Hospitals According to Ownership or Control

	1929	1930	Difference in Percentage of Beds Occupied
Federal	76.8	79.2	2.4 increase
State	94.6	97.8	0.8 decrease
County	80.7	82.2	1.5 increase
City	74.3	75.9	1.6 increase
City and county	80.2	81.6	1.4 increase
Governmental	88.9	88.8	
Church	66.7	64.2	2.5 decrease
Fraternal	68.7	67.4	1.3 decrease
Industrial	54.4	53.1	1.3 decrease
Individual or partnership	54.2	51.7	2.5 decrease
Independent associations	65.9	63.4	0.5 decrease
Nongovernmental	64.6	63.2	
All hospitals	80.1	79.8	

TABLE 9—Total Patient Days, According to Control

	1923	1929	1930	Percentage of Increase 1923 to 1930
Federal	12,752,000	16,802,045	18,432,135	44.1
State	9,571,600	132,810,330	135,801,835	45.2
County	11,066,590	19,342,810	22,093,000	84.6
City	15,281,100	15,490,600	17,476,900	14.4
City and county	1,113,950	4,162,240	4,215,750	275.4
Total governmental	136,605,210	188,663,025	201,019,000	47.1
Church	17,901,790	27,656,000	27,434,130	53.2
Fraternal	1,163,255	1,323,855	1,379,335	18.6
Industrial	1,123,835	1,301,595	1,298,670	1.6
Individual	9,998,440	7,520,460	7,281,020	*37.3
Independent associations	34,920,010	38,754,600	40,222,200	15.2
Total nongovernmental	60,101,330	76,606,560	77,615,420	19.2
Grand total all hospitals	201,792,545	265,269,590	278,634,430	38.1

* Decrease

facts shown in more detail by the statistical tables and charts in these pages, and the list of 6,719 institutions printed in this issue, afford ample opportunity for studies, comparisons and, perhaps, deductions.

GROWTH OF HOSPITAL SERVICE FROM 1909 TO 1930

From 1909, when the American Medical Association published its first complete list of hospitals, to the close of the year 1930, the total capacity of all the hospitals

TABLE 10—Growth of Hospital Service, 1909 to 1930

	Federal Hospitals		State Hospitals		All Other Hospitals		Total	
	Number	Capacity	Number	Capacity	Number	Capacity	Number	Capacity
1909	71	8,827	232	189,049	4,006	223,189	4,309	421,065
1914	93	12,692	294	232,834	4,600	247,044	4,387	452,566
1918	110	18,515	303	262,204	4,910	331,182	5,323	612,901
1923	220	53,569	601	500,200	6,009	566,778	6,830	1,060,547
1927	301	60,444	592	534,790	6,014	601,254	6,907	1,170,448
1928	294	61,765	593	539,700	6,000	601,465	6,887	1,171,870
1929	292	59,901	576	507,706	6,000	573,607	6,868	1,167,214
1930	288	63,681	551	400,309	5,800	406,109	6,719	1,070,100

in the United States has grown from 421,065 beds to 955,869 beds, an increase of 534,804 beds, or 127 per cent, in the twenty-one years. In the same period the total hospitals in the United States increased in number from 4,359 to 6,719. Other notable changes that took place were the growth of federal hospitals from a total

capacity of 8,827 beds in 1909 to 63,581 beds in 1930—an increase of 54,754 beds, or 620.3 per cent. State hospitals increased in number from 232 to 581 and in capacity from 189,049 beds to 405,309 beds, an increase of 216,260 beds, or 114.3 per cent. During this time all other hospitals than state and federal increased from 4,056 to 5,850, and in capacity from 223,189 beds to 486,979 beds, an increase of 263,790 beds, or 118.2 per cent, in capacity.

A reliable inventory, or census of hospital service based on the number of patient-days was not made until 1923. The number of hospital patient-days for that

TABLE 11—Growth of Laboratories, Roentgen Ray, and Physical Therapy Departments and Schools of Nursing in Hospitals

	Laboratories		X-Ray Departments		Departments of Physical Therapy		Schools of Nursing	
State	1923	1930	1923	1930	1927	1930	1923	1930
Alabama	43	69	30	77	32	27	7	47
Arizona	27	27	18	70	10	11	8	1
Arkansas	30	51	29	61	22	24	20	24
California	103	232	184	270	133	14	0	56
Colorado	50	68	46	69	30	27	26	22
Connecticut	43	40	40	49	22	22	29	24
Delaware	8	8	6	9	0	0	4	0
District of Columbia	17	24	19	22	11	14	16	14
Florida	26	60	26	60	20	20	24	16
Georgia	47	81	38	83	20	31	34	70
Idaho	26	31	27	42	18	26	12	11
Illinois	174	243	171	234	128	14	119	138
Indiana	62	96	67	100	34	1	4	23
Iowa	110	117	110	130	67	68	67	48
Kansas	74	81	70	89	44	44	60	47
Kentucky	44	70	42	73	33	31	19	11
Louisiana	37	57	23	38	24	24	11	17
Maine	22	40	30	48	21	11	31	0
Maryland	43	88	34	50	22	24	39	9
Massachusetts	140	166	118	176	74	80	101	9
Michigan	91	100	93	167	82	8	40	49
Minnesota	100	176	102	146	72	62	68	61
Mississippi	40	57	46	7	20	23	1	11
Missouri	73	114	67	11	80	69	42	43
Montana	20	38	20	42	17	19	10	16
Nebraska	38	66	7	14	0	0	0	19
Nevada	0	6	0	14	0	0	0	0
New Hampshire	21	70	10	31	10	10	10	22
New Jersey	77	114	77	116	62	70	3	60
New Mexico	28	32	1	22	0	0	11	2
New York	241	81	247	88	180	209	140	140
North Carolina	6	190	0	117	47	40	0	43
North Dakota	20	4	21	4	10	10	18	19
Ohio	189	170	134	188	106	104	100	70
Oklahoma	49	88	46	90	0	40	4	0
Oregon	0	43	29	0	0	0	14	1
Pennsylvania	24	280	212	218	134	11	180	61
Rhode Island	10	19	0	18	0	1	0	10
South Carolina	4	44	19	44	1	18	28	0
South Dakota	46	21	4	20	0	0	10	0
Tennessee	40	69	41	4	4	0	0	4
Texas	90	199	77	229	0	110	0	0
Utah	17	21	1	0	11	6	0	0
Vermont	1	17	11	20	10	11	0	10
Virginia	48	8	0	91	0	24	0	44
Washington	4	0	0	4	4	4	1	0
West Virginia	0	0	49	0	0	20	4	0
Wisconsin	8	11	8	11	0	0	1	41
Wyoming	1	10	1	0	10	14	0	0
Totals	70	4,440	2,841	4	601	700	144	1,000

The number of hospitals having physical therapy departments prior to 1927 is not known.

year, by groups and in totals, is given in an accompanying table. The total patient days in all hospitals in 1923 was 201,792,545 and for 1930 it was 278,634,430—a growth of 38.1 per cent in the seven years. During those seven years the growth by patient days in governmental hospitals as a group was 47.1 per cent, as contrasted with a 19.2 per cent growth in the non-governmental group.

COUNTIES HAVING HOSPITALS

The accompanying table of counties having a hospital affords an opportunity to observe the number of counties in each state that had one or more hospitals per cent.

munity use in 1920, as compared with the number of counties having similar hospital service in 1930. This does not refer to county hospitals as such but to any hospitals maintained within those counties by any agency and available for hospitalizing the sick and injured of the community. During the ten year period the total number of counties having hospitals increased from 1,332 to 1,829, a net increase of 497 counties.

In 1920, only 44 per cent of the 3,027 counties then existing in the United States had hospitals. By 1930, 59.5 per cent of the 3,076 existing counties had hospitals.

TABLE 12—Counties Having Hospitals

State	Total Counties		Counties Having Hospitals		Per Cent of Counties Having Hospitals	
	1920	1930	1920	1930	1920	1930
Alabama	67	67	17	37	25.4	55.2
Arizona	14	14	12	14	85.7	100.0
Arkansas	73	71	18	37	24.0	44.0
California	58	88	40	4	79.3	97.1
Colorado	67	63	29	26	41.6	71.1
Connecticut	8	8	8	8	100.0	100.0
Delaware	3	3	1	1	33.3	100.0
District of Columbia	1	1	1	1	100.0	100.0
Florida	51	67	13	29	24.0	43.2
Georgia	137	161	28	47	18.4	29.2
Idaho	41	44	11	26	6.6	59.0
Illinois	102	102	61	71	58.8	69.7
Indiana	92	92	36	61	76.6	69.6
Iowa	99	99	56	81	54.6	81.9
Kansas	101	101	4	68	42.1	55.2
Kentucky	120	120	12	41	10.7	40.8
Louisiana	64	64	16	29	25.0	41.1
Maine	16	16	14	16	87.5	100.0
Maryland	24	21	13	17	54.2	70.8
Massachusetts	14	14	13	14	92.8	100.0
Michigan	8	8	48	64	57.8	77.1
Minnesota	86	87	63	70	73.2	87.4
Mississippi	82	82	22	41	26.8	50.0
Missouri	115	115	26	63	22.6	46.1
Montana	44	56	28	37	63.6	66.1
Nebraska	9	9	1	46	77.6	49.5
Nevada	16	17	13	12	81.2	71.1
New Hampshire	10	10	10	10	100.0	100.0
New Jersey	21	21	19	21	90.5	100.0
New Mexico	28	31	1	18	63.6	68.0
New York	61	62	58	69	86.9	93.5
North Carolina	100	100	40	61	40.0	61.0
North Dakota	3	3	24	30	4.3	66.6
Ohio	88	88	53	61	62.5	73.9
Oklahoma	77	77	27	47	35.0	61.0
Oregon	56	56	23	28	63.9	77.7
Pennsylvania	67	67	54	57	70.1	85.1
Rhode Island	5	5	3	4	60.0	80.0
South Carolina	46	46	18	26	40.0	56.6
South Dakota	69	69	21	36	30.4	52.2
Tennessee	96	96	22	38	28.9	60.0
Texas	231	234	64	121	25.1	47.6
Utah	29	29	9	14	31.0	48.2
Vermont	14	14	10	11	71.4	78.6
Virginia	100	100	23	42	29.0	43.0
Washington	30	30	24	28	61.6	71.5
West Virginia	3	53	27	28	40.1	50.8
Wisconsin	71	71	45	55	63.4	77.4
Wyoming	21	24	14	14	66.7	58.3
Totals	3,027	3,076	1,332	1,829	44.0	59.5

Many of the counties that do not have hospitals are quite well served by hospitals in neighboring counties. The way in which hospital service has been made available to all communities by the network of splendid highways built mainly in the last ten years is an item of importance.

It is obvious that the percentage of counties that have hospitals located within them is not the only, and probably not the best, gauge to the adequacy of hospital service for a given state or area. It is, nevertheless, a gauge that can be tabulated and, therefore, easily grasped.

SCHOOLS OF NURSING

In 1923 when the Council made its first complete census of schools of nursing, it found the number of state accredited schools to be 1,586 and of unaccredited

schools 378, a total of 1,964. In 1930 it found 1,764 state accredited schools. The number of unaccredited schools was not obtained in the 1930 census.

The number of schools of nursing in the different years for which those numbers were obtained are as follows:

	State Accredited	Unaccredited
1923	1,586	378
1926	1,814	264
1930	1,764	not known

The lists of hospitals registered by the American Medical Association as printed in this issue of THE JOURNAL point out accredited schools of nursing with a heavy black dot (•), and affiliated schools with a dotted circle (○).

HOSPITALS IN THE UNITED STATES POSSESSIONS

Reports were received from 186 hospitals in the territorial possessions indicating that they have a total capacity of 16,916 beds accommodating an average of 12,036 patients. There was an increase of average number of patients in the Canal Zone, Hawaii, the Philippine Islands and Porto Rico, but returns from all the possessions for the 1930 census are still incomplete. The names of those territories and names of hospitals therein from which reports have been received are included in the list of hospitals in this issue.

TABLE 13—Hospitals in the United States Possessions

Territory	Hospitals	Beds	Basinsets	Average Patients
Alaska	16	446	37	205
Canal Zone	10	1,794	40	1,330
Guam	1	60		90
Hawaii	41	4,565	101	3,414
Philippine Islands	76	7,365	274	5,199
Porto Rico	40	2,528	75	1,731
Virgin Islands	2	128	12	64
Totals	186	16,916	539	12,036

HOSPITAL INTERNSHIP—THE FIFTH YEAR
IN MEDICINE

The 664 hospitals approved for internship by the Council on Medical Education and Hospitals at the present time afford 5,584 internships. At the same time the total number of medical graduates for the year 1930 was 4,565, making 1,019 approved internships in excess of the total number of available medical graduates. Because of this shortage of 1,019 interns, some hospitals already approved for internships will necessarily be disappointed.

With the more thorough inspection of hospitals during the past two years, fifty-one hospitals have been removed from the list of hospitals approved for internships, but new hospitals approved in the same period more than compensate for that shrinkage. The resulting competition among hospitals for available interns is one of the factors that tend to improve the internship, making it a real fifth year in medicine.

Some of the hospitals that find themselves not suited for the general internship or fifth year in medicine are offering residencies that afford educational opportunities for graduates who already have had their general internship.

In connection with the shortage of interns, hospitals and particularly their medical staffs might well consider ways of making their internships educationally more

attractive through autopsies and other means of teaching interns. The rates of autopsies for the 605 hospitals thus far reporting for the calendar year 1930 are as follows:

Percentage of Autopsies	No. of Hospitals
100-90	0
89-80	4
79-70	10
69-60	26
59-50	26
49-40	59
39-30	87
29-20	184
19-15	143
14-10	45
9-5	18
4-1	2
None	1
Not reporting	59
Total	664

The problem of more and better autopsies should be a matter of continued education. Consideration has been exercised in the administration of the requirement of a 15 per cent autopsy rate.

A canvass of all the hospitals approved for intern training discloses that 20 of the 664 hospitals reported a straight service internship and 644 hospitals a rotating or mixed service, including 12 that have no obstetric service.

The list of hospitals approved for internships is subject to constant revision by periodic inspections and by comprehensive reports furnished by the approved hospitals, regarding their internships.

In the twelfth edition of the American Medical Directory, now being prepared for publication, the hospitals approved for internships will be indicated with a five point star (*). They are marked the same way in the list of hospitals published in this issue. A list, strictly up to date, is available at all times on application to the Council on Medical Education and Hospitals at 535 North Dearborn Street, Chicago.

Copies of the approved list are sent to all the medical colleges with the request that one copy be placed in the library or in the office of the dean, and another one posted on the bulletin board.

The biographic files of the American Medical Association contain the records of all physicians, interns and medical students. The record includes the name of the hospital in which the internship is served, giving the date of beginning and date of the end of the internship. In this way each intern is guaranteed credit for his hospital internship.

In case a contract of internship is broken without a release from the hospital, it is the privilege of both the intern and the hospital to write the Association and tell why the contract was broken. Both letters are kept in the permanent files of the Association together with another one from the dean of the medical college from which the intern graduated.

Graduates, therefore, should exercise great care in selecting an internship and in signing a contract. If for any reason it becomes necessary to terminate such a contract, a mutual understanding should be arranged and a written release obtained from the hospital. It would be well if a copy of that release were filed with the American Medical Association.

THE FUNCTION OF THE HOSPITAL IN GRADUATE MEDICAL EDUCATION

Residencies in Specialties—The means of obtaining graduate medical education in any special field has undergone a great change in the last fifteen or twenty

years. Formerly the prospective specialist was compelled to visit the greater clinics in this country and abroad, observing there the work and methods of those who were masters in their particular fields. After a certain amount of this he perhaps became eligible for an assistantship in one of these great clinics. Many excellent specialists were thus trained.

There is being developed however, a method whereby greater numbers of doctors can avail themselves of graduate opportunities. Two factors have been responsible for this. First, the improvements in medical education which have resulted in the developing of more well qualified teachers and, second, the improvements in hospital service and, more important, in the staffs of the hospitals. It became evident that there were more than two or three great teachers in this country in any one specialty. That such clinical teachers were being developed in the better hospitals was recognized by the Council on Medical Education and Hospitals in 1925 when it published a list of "Hospitals Providing Approved Residencies in Certain Specialties." There were forty-six in the list. In its report to the House of Delegates in 1924 the Council said:

HOSPITALS AS GRADUATE MEDICAL SCHOOLS

There are 285 hospitals in the United States offering advanced internships in the various specialties, many of which might easily be developed into acceptable graduate medical schools. In these or other hospitals scattered throughout the country there are doubtless physicians who, in education and special training are eminently qualified to supervise the instruction of other physicians and who also have access to sufficient clinical material to provide excellent graduate medical instruction. There is a great opportunity, therefore, to enlarge greatly the opportunities for graduate medical education by searching for these teachers and stimulating the development of graduate courses either as independent teaching hospitals or as courses affiliated with or otherwise relating to, graduate schools of medicine.

This list of approved hospitals has grown until at present there are 349, with a capacity of 218,495 beds providing 2,069 residencies. Today the great majority of graduates intending to specialize enter their specialty in these hospitals and are in residence for two, three or more years. No degree is conferred at the end of that time, but at least in those hospitals which have appeared on the list of hospitals approved for residencies by the American Medical Association there is reasonable certainty that these men are receiving the fundamental training which will fit them to grow and develop in their chosen fields.

No discourse on graduate medical education would be complete without mention of the thorough work that is being done at schools such as the University of Pennsylvania, the University of Minnesota and the graduate school now being developed at Columbia University through its merger with the New York Postgraduate Medical School. However relatively few men are privileged to take their work in these institutions. Hence the necessity of developing adequate graduate instruction by means of residencies for those who are to form the great bulk of specialists.

A committee appointed by the Association of American Medical Colleges in October, 1927, defined graduate medical study as follows:

Graduate medical study is special medical education given in decided fields in medicine, surgery, obstetrics, gynecology, pediatrics, dermatology, venereal diseases, otolaryngology, ophthalmology, radiology, pathology, bacteriology, physiology, pharmacology, and the like, and is the basis for the development of the specialist.

ment of the medical school. One academic year devoted to the study of a single (convention) medical subject is the minimal matriculation period and constitutes credit toward a graduate university degree maturing within a minimum of two academic years for a master's degree and within a minimum of three such years for a doctorate degree. The first year provides for appropriate special fundamental studies entirely scientific or partly scientific and partly clinical, and may also include research. The second year provides for advanced special scientific or clinical practice and thesis work. The third year provides for special scientific or clinicoscientific research, but may also include some practical clinical or teaching work. Graduate medical studies are available to graduates in arts or science or medicine. The degrees concerned are (1) Master of Science, (2) Master of Science in Medicine, (3) Doctor of Science in Medicine, (4) Doctor of Philosophy, (5) Doctor of Public Hygiene, (6) Doctor of Public Health. Any of these degrees may be granted to doctors of medicine, but the first and fourth are the only degrees available to other graduate students.

This no doubt represents the ideal training for the clinical specialist but is difficult of emulation in a hospital not connected with a medical school. It is becoming increasingly evident, however, that competent specialists can be developed within a reasonable period of time in a hospital which is fortunate enough to have a few real clinical teachers and sufficient clinical material. In a recent address before the Annual Congress of the Council on Medical Education and Hospitals Dr. Henry A. Christian spoke as follows:

It is by no means necessary that a teaching hospital have any association with a medical school. In fact numerous hospitals affiliated with medical schools are not what I would regard as teaching hospitals. Any hospital may become a teaching hospital when members of the staff follow the general methods applied in graduate instruction in university departments of science, literature, etc. In a teaching hospital there should be a resident staff of several grades: interns or house officers, assistant residents and residents. The resident staff forms the student body with interns as apprentices and assistant residents and residents as graduate students; the latter having considerable free time to carry on investigation.

The teaching hospitals, therefore, through their better trained staffs are affording greater clinical opportunities than ever before for the graduate student. In striving for improvement on the educational side these hospitals will do well to pattern after the ideal attained in the university graduate school.

THE SIZE OF HOSPITALS

Hospitals having over 300 beds do 66.8 per cent of all the hospital work as graded by their total average daily census of patients. By the same measure, 8.3 per

TABLE 14—Number and Capacity of Hospitals According to Size

Size of Hospitals	Number	Per Cent	Capacity		Beds	Average Patients
			Beds	Per Cent		
Over 300 beds	516	7.6	579,801	58.5	6,167	10,742
From 201 to 300 beds	3,22	5.2	87,397	9.1	7,242	62,854
From 101 to 200 beds	830	12.3	110,282	12.4	12,611	82,192
From 51 to 100 beds	1,213	18.6	93,223	9.7	10,019	55,178
From 26 to 50 beds	1,685	23.5	61,011	6.3	7,490	33,042
From 10 to 25 beds	1,930	28.8	33,771	3.4	4,111	16,012
Under 10 beds	245	3.6	1,794	0.1	450	742
Total	6,719		958,661		49,854	763,382

cent is done in those hospitals having between 201 and 300 beds, and 10.8 per cent in those having between 101 and 200 beds.

Hospitals having between 51 and 100 beds have 7.6 per cent of the patients; 26 to 50 beds, 4.3 per cent; 10 to 25 beds, 2.1 per cent; and institutions of less than 10 beds, 0.09 per cent.

OUTPATIENT DEPARTMENTS OF HOSPITALS

A carefully prepared questionnaire was sent to all of the 1,799 hospitals that in 1929 claimed to have outpatient departments. As a result of the questionnaire and a follow-up, 1,178 sent reports complete enough for tabulation. Of the 621 that did not return a report, not a few wrote that they did not have an outpatient department in the sense of an organized, equipped department for the examination and treatment of ambulatory patients.

Reports from a total of 1,178 outpatient departments are very significant in comparison with the 678 that responded to a similar questionnaire in 1922, for the year 1921. The number and classification of outpatient departments reporting in 1930, for the year 1929, were as follows:

General outpatient departments	109
Special outpatient departments	
Tuberculosis	5
Venereal disease	5
Nervous and mental	10
Eye, ear, nose and throat	10
Orthopedic surgery	10
H. Collapsion	10
Total	119
Miscellaneous: cancer, dental, emergency, skin and cancer and physical therapy	

TABLE 15—Outpatient Service by States Comparing 1921 and 1929

State	Population 1920	Number of General Outpatient Depts.		Number of Patients		Number of Visits by Patients	
		1921	1929	1921	1929	1921	1929
Alabama	1,642,297	7	15	37,207	111,478	113,415	184,334
Arizona	113,833	17	17	77,778	77,778	168,673	168,673
Arkansas	1,830,981	7	10	11,888	36,888	6,888	31,236
California	6,200,000	76	10	147,867	500,188	411,881	1,967,666
Colorado	1,007,011	2	7	1,815	28,097	3,614	8,041
Connecticut	1,604,711	9	11	11,900	9,700	87,902	100,684
Delaware	238,200	7	1	8,782	7,400	75,771	84,441
Dist. of Columbia	48,869	10	16	11,109	220,000	60,700	121,280
Florida	1,466,000	12	12	7,800	18,678	10,226	69,685
Georgia	2,009,447	7	16	11,109	220,000	60,700	121,280
Idaho	44,837	1	1	912	203	2,711	543
Illinois	7,607,684	73	4	114,031	290,391	328,884	960,680
Indiana	7,222,600	16	11	1,913	101,000	4,300	139,079
Iowa	2,467,900	14	14	11,612	42,898	19,672	137,497
Kansas	1,879,046	6	13	2,801	233,806	46,914	763,700
Kentucky	2,622,668	9	16	18,801	9,600	96,773	121,870
Louisiana	2,091,496	12	9	78,375	53,649	281,068	164,989
Maine	600,006	6	10	3,471	18,613	12,433	47,008
Maryland	1,629,721	10	18	100,371	338,341	291,828	422,770
Massachusetts	4,233,646	56	66	2,111	443,777	991,102	1,410,409
Michigan	4,842,280	22	17	97,865	287,329	269,777	948,170
Minnesota	5,666,445	14	21	53,293	138,377	213,171	474,467
Mississippi	2,007,970	5	7	16,119	1,332	10,022	30,311
Missouri	690,961	18	22	109,160	187,860	477,160	780,333
Montana	536,332	3	6	15,668	1,070	36,682	86,634
Nebraska	1,578,900	5	6	4,399	17,307	20,510	31,926
Nevada	90,981	3	2	6,009	4,803	17,200	6,985
New Hampshire	466,291	1	9	801	5,001	2,944	22,007
New Jersey	4,028,027	41	50	137,661	440,311	3,3031	740,911
New Mexico	427,216	1	9	1,600	19,781	7,689	7,689
New York	12,619,503	94	111	908,070	988,473	2,600,790	4,943,100
North Carolina	1,170,987	5	24	3,114	64,460	12,697	98,012
North Dakota	682,448	2	1	833	10,791	3,004	10,888
Ohio	6,639,537	27	43	98,364	200,411	344,490	620,681
Oklahoma	2,391,777	2	9	2,332	30,217	10,214	263,999
Oregon	902,691	2	6	3,515	12,808	5,017	51,091
Pennsylvania	9,640,802	122	132	49,172	967,800	1,624,417	2,460,048
Rhode Island	687,932	10	9	24,963	24,686	9,788	118,422
South Carolina	1,732,667	4	6	17,104	29,334	17,471	56,416
South Dakota	690,700	5	6	3,344	12,672	47,823	56,416
Tennessee	6,088,769	12	36	22,929	80,204	96,503	210,891
Texas	8,127,272	12	13	21,460	107,488	70,974	7,569
Utah	502,682	3	4	4,196	4,899	3,094	7,809
Vermont	339,092	3	3	2,800	1,762	1,570	1,809
Virginia	2,419,471	7	16	14,476	49,383	31,917	169,109
Washington	1,561,967	1	12	6,974	38,200	20,971	97,628
West Virginia	1,728,510	10	10	5,009	16,581	7,739	76,513
Wisconsin	2,990,982	11	12	68,400	40,504	199,401	170,289
Wyoming	224,097	2	3	1,820	1,792	3,990	8,821
Totals	192,698,100	678	1,027	3,000,163	6,644,083	9,527,123	19,066,394

In the 1,027 general outpatient departments, 6,644,983 patients were examined and treated in 1929, and they made a total of 19,056,394 visits, in 1921, in the 678 outpatient departments, 3,000,163 patients were examined and treated, and they made a total of 9,522,123 visits. Such a comparison can be made since the proportion of replies received for 1929 is approxi-

outpatient departments more rapidly than those in other sections of the country, in the last eight years. This is no doubt due to the fact that whereas in the past the majority of outpatient departments were in the larger cities today many of the hospitals being built in the smaller cities contain outpatient departments. Older hospitals have also organized such departments. In

TABLE 16—Increase in Outpatient Service According to State Groups

	Population 1930	Per Cent of Increase Over 1922	General Outpatient Depts		Per Cent of Increase	Number of Patients		Per Cent of Increase	Number of Visits		Per Cent of Increase
			1921	1929		1921	1929		1921	1929	
North Atlantic states Conn. Me. Mass. N. H. N. J. N. Y. Pa. R. I. Vt.	34,458,362	16	343	496	24	1,830,289	2,905,148	58	1,794,590	2,161,520	25
South Atlantic states Del. D. C. Fla. Ga. Md. N. C. S. C. Va. W. Va.	15,774,473	12	67	123	83	169,116	847,932	348	537,981	1,550,185	189
North Central states Ill. Ind. Ia. Kan. Mich. Minn. Mo. Neb. N. D. O. S. D. Wis.	38,533,038	13	155	234	52	581,051	1,563,441	169	1,032,970	5,088,066	164
South Central states Ala. Ark. Ky. La. Miss. Okla. Tenn. Tex.	22,047,229	15	59	115	94	209,226	650,875	201	751,588	1,427,020	89
Western states Ariz. Calif. Colo. Ida. Mont. Nev., N. M. Ore. Utah Wash. Wyo.	11,885,058	33	54	129	143	190,481	697,584	267	605,185	1,654,574	269
Totals in United States	122,698,190	16	678	1,027	51	3,000,163	6,644,983	121	9,522,123	19,056,394	100

mately that for 1921. The tremendous growth of this type of medical service is apparent.

In the 131 special outpatient departments reporting for 1929, there was a total of 626,574 patients who made a total of 1,339,984 visits.

The striking fact is that while in 1921 one person out of every 35 in the United States visited an outpatient department at least once during the year, in 1929 no less than 1 out of every 18 made such a visit. If the patients visiting other dispensaries were included, the ratio would, of course, be smaller still.

RATIO OF GROWTH OF OUTPATIENT DEPARTMENTS
TO INCREASE OF POPULATION

The conclusion that these figures only correspond to the growth of population is confuted by the following table:

	1921	1929	Per Cent Increase
Population of United States	10,710,670	122,698,190	16
Outpatient departments in hospitals of United States	678	1,027	51
Number of patients treated	3,000,163	6,644,983	121
Number of visits made	9,522,123	19,056,394	100

Thus we find that while the total population has grown only 16 per cent, the number of outpatient departments of hospitals has been increased by 51 per cent, 121 per cent more patients were treated in these clinics, and 100 per cent more visits were made in 1929. Furthermore, this remarkable increase in the number and use of these facilities has taken place in the short space of eight years.

The number of outpatient departments of the hospitals in 1921 and in 1929 and the work done by them is summarized according to states in table 15. This shows Pennsylvania with the greatest number and New York with the next greatest.

In the summary according to geographic districts as shown in table 16, the figures warrant comparison.

It is apparent that hospitals in the Western, South Central and South Atlantic states have been organizing

other words, hospitals are no longer confined to the large cities, and the growth of the outpatient departments has simply followed that of the hospitals.

OUTPATIENT DEPARTMENTS IN TWENTY-FIVE
LARGEST CITIES REPORTED INCREASES
IN PATIENTS AND VISITS

Table 17 shows that 269 general outpatient departments of hospitals, or 26 per cent of the total, are located in the twenty-five largest cities of the United

TABLE 17—Outpatient Departments in Twenty-Five
Largest Cities

	Population 1930	General Outpatient Depts.		Number of Patients Treated Fiscal Year		Visits by Patients Fiscal Year	
		1921	1929	1921	1929	1921	1929
New York	6,919,977	62	76	820,687	1,141,112	1,060,000	1,780,000
Chicago	3,755,890	24	28	106,211	200,180	272,400	600,000
Philadelphia	1,844,040	44	50	211,604	620,600	108,754	1,000,000
Detroit	1,751,000	8	14	84,416	88,100	10,000	200,000
Los Angeles	1,251,000	2	10	40,400	110,000	60,000	100,000
Cleveland	900,400	10	12	61,000	144,000	20,000	200,000
St. Louis	850,000	1	12	79,000	110,000	41,100	400,000
Baltimore	801,800	1	10	8,200	34,000	2,000	20,000
Boston	750,000	18	18	181,000	200,000	110,000	1,000,000
Pittsburgh	660,400	17	17	47,100	100,000	110,000	1,000,000
San Francisco	621,000	10	28	50,000	200,000	200,000	1,000,000
Buffalo	550,000	2	8	20,000	60,000	10,000	40,000
Milwaukee	500,000	0	0	40,000	20,000	0	100,000
Washington D. C.	480,000	10	1	2,000	10,000	0	10,000
Minneapolis	460,000	3	3	10,000	14,000	10,000	10,000
New Orleans	450,000	0	0	0	0	0	0
Cincinnati	440,000	1	1	11,000	20,000	0	0
Newark N. J.	440,000	10	10	2,000	10,000	110,000	1,000,000
Kansas City Mo.	390,000	6	5	10,000	40,000	0	10,000
Seattle	350,000	1	2	0	10,000	0	0
Indianapolis	340,000	1	4	0	40,000	0	0
Rochester N. Y.	320,000	1	4	0	20,000	0	10,000
Jersey City N. J.	310,000	4	4	0	10,000	0	0
Louisville Ky.	290,000	0	4	0	0	0	10,000
Portland Ore.	290,000	1	1	10,000	40,000	0	10,000
Total	122,698,190	440	511	3,000,163	6,644,983	9,522,123	19,056,394

States. New York reports the greatest number, Philadelphia the second greatest, and San Francisco, third. In the number of patients treated, Pittsburgh is in third place and in the number of visits in the Boston is in third place.

TYPE OF SERVICE RENDERED

Of the hospitals reporting, 707 have divided their outpatient departments into various clinical services, the remaining 320 are not departmentalized. There is undoubtedly a growing tendency in the former direction. The thirty clinical divisions listed in the questionnaire have been condensed into nine main groups, as follows:

Medicine	Surgery	Obstetrics
Cardiac	Accident and emergency	Gynecology
Dermatology	Ear, nose, throat	Prenatal
Diagnosis	Eye	Postnatal
Gastrointestinal	Genito-urinary	
Mental	Orthopedics	
Metabolism	Proctology	
Allergy		
Pediatrics	Tuberculosis	Physical therapy
	Nutrition	Electrotherapy
		Hydrotherapy
		Massage
Veneral	X-ray	Dentistry

The number of outpatient departments conducting such clinical departments, the patients treated, and the visits, are collected in the following table:

	Number	Patients	Visits
General service (records not kept by departments)	370	1,563,104	3,866,642
Medicine	548	1,033,299	3,649,903
Surgery	548	2,661,730	7,611,166
Obstetrics and gynecology	418	293,331	1,087,380
Pediatrics	426	260,628	841,410
Physical therapy	239	2,090,111	1,908,003
Tuberculosis	277	119,348	331,018
Veneral diseases	201	99,096	631,888
X-ray	393	601,007	576,910
Dentistry	319	251,453	630,144
Total	3811	1,041,161	20,110,119

SOCIAL SERVICE

In answer to the question as to who determines the ability of the patient "to pay reasonable charges for the services of a private physician," 762 replies were received, leaving out of account 220 answers from federal, industrial and charitable institutions. The 762 replies ran as follows:

Social service	538
Physician	164
Charities	12
Superintendent	8
Governing board of hospitals	6
Court	2
Manager of hospital	1
No one responsible	31
Total	762

In 1921 only 380 general dispensaries (including those outside of hospitals) employed social service workers, as against 538 in 1929. Evidently hospital administrators are coming to the conclusion that the determination of the patient's ability to pay is a function of the social service department.

CONCLUSIONS REGARDING OUTPATIENT DEPARTMENTS

1. There has been a tremendous growth in the number and in the use of the outpatient departments.
2. The Western states report the greatest number of new departments organized, but the rate of growth is greatest in the South Atlantic states.
3. Outpatient departments are becoming departmentalized.
4. The social service worker determines the patient's ability to pay in the majority of instances.

Following is a summary of statistics covering both the hospitals and sanatoriums and the related institutions:

	Hospitals	Beds	Bassinets	Average Patients
Hospitals and sanatoriums	5,441	898,042	47,392	724,943
Related institutions	1,375	57,827	2,192	38,439
Totals registered	6,816	955,869	49,584	763,382

CLASSIFICATION

(a) *Hospitals and Sanatoriums*, (b) *Related Institutions*—In this issue for the first time the list of hospitals registered by the American Medical Association, beginning on page 1023 is given in two sections, (a) 5,344 hospitals and sanatoriums, and (b) 1,375 related institutions.

The related institutions, because of their special or limited nature, do not deserve to be regarded as hospitals but are, so far as we know, entirely ethical and render a needed nursing or medical service to their communities.

Among the related institutions will be noted some that bear the name of general hospitals. The majority of these have been found lacking in some of the services that are usually found in a general hospital. Among the essential features, one or more of which is usually lacking in these small institutions, are adequate laboratory service, staff organization, radio logic service, record system, and consultation to safeguard the best interests of patients.

Among the 6,719 institutions appearing on the register are 5,344 hospitals having a capacity of 898,042 beds and 1,375 related institutions with a total capacity of 57,827 beds.

HOW THE FACTS WERE OBTAINED

The figures shown in these articles were obtained through (1) reports made by the hospitals themselves using a simple form which is ordinarily filled out in the superintendent's office and signed by the superintendent, (2) verification, where necessary, and additional facts, if desired, obtained by special correspondence and by inspection, (3) a printed proof of hospital data for the American Medical Directory submitted to each hospital for verification, and (4) finally the list of hospitals sent to the Association's county correspondents and district councilors and others, thus obtaining additional facts and verification from reliable sources outside the hospitals.

The response of hospitals in cooperating with the Association to make the census as complete as possible has been very gratifying.

HOSPITALS REFUSED REGISTRATION

Not included in any of the lists or statistics in this issue are 540 institutions which because of alleged unethical or criminal practices, admission to their staffs of members who are seriously unqualified, either morally or professionally, flagrant methods of advertising or for other valid reasons, are deemed unworthy of being included in any published list of reputable hospitals. The exclusion of such institutions from the Council's published lists marks the development of an aggressive campaign to establish safeguards against irresponsible or malicious institutions which are a menace to the public. For these reasons, therefore, they are excluded from the lists of institutions held out as worthy of receiving the public's patronage. The 540 unregistered institutions have only 14,142 beds.

ARKANSAS

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basins	Outpatient Dept	Supt M D	R N Layman	Year Est
Arkadelphia 3350—Clark Co	Gen	Indiv	12	3	4	No	M D	1919	
Moore and Wallis Sanit	Gen	Part	10	6		No	M D	1919	
Townsend Sanitarium	Co								
Batesville 4484—Independence	Co								
Gray Johnston and Craig Clinic	Gen	Part	14			No	M D	1930	
Bauville 2960—Saline Co	Indus	Indus	10	4	2	Yes	M D	1908	
Bauville Hospital									
Benton 3440—Saline Co	Gen	Indiv	16	4	2	No	M D	1924	
Bi-theville 10099—Mississippi	Co								
Bigtheville Hospital	Gen	Indiv	40	10	3	No	M D	1923	
Camden 7273—Ouachita Co	Gen	Indep	27	9	10	No	R N	1920	
Camden Hospital									
Charleston 801—Franklin Co	Gen	Indiv	18			No	M D	1902	
Bollinger Hospital									
Clarksville 33031—Johnson Co	Gen	Indep	19	4	1	No	Lay	1924	
Johnson County Hospital									
Conway 5534—Faulkner Co	Gen	Indep	14		4	No	Lay	1920	
Faulkner County Hospital									
Crossett 2811—Ashley Co	Indus	Indus	30	1	6	Yes	M D	1909	
Crossett Hospital									
De Queen 2938—Sevier Co	Gen	Part	25	8		No	R N	1920	
De Queen Hospital									
Dumas 1669—Desha Co	Gen	Indep	22	8	3	No	Lay	1920	
Dumas Hospital Clinic									
El Dorado 16421—Union Co	Gen	Indep	22	8	3	No	Lay	1920	
Henry C Rosamond Me	Gen	Part	37	28	12	No	Lay	1927	
Memorial Hospital	Gen	Church	70	33	6	No	Lay	1920	
Warner Brown Hospital	Gen	Church							
Eureka Springs 226—Carroll Co	Gen	Indep	40		3	No	R N	1929	
Dan Sawyer Mem Hosp									
Fayetteville 7904—Washington Co	Gen	Indep	40		3	No	R N	1929	

ALABAMA

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basins	Outpatient Dept	Supt M D	R N Layman	Year Est
Alabama City 8544—Etowah Co	Gen	County	22	18		No	R N	1924	
Etowah Co Puber Hosp	TB								
Albertville 2716—Marshall Co	Gen	Indiv	24	6	2	No	Lay	1924	
Sand Mountain Infirmary	Gen								
Alexander City 4510—Tallapoosa Co	Gen	Indiv	54	12	4	No	R N	1923	
Russell Hospital	Gen								
Andalusia 5154—Covington Co	Gen	Indep	20	8	1	No	R N	1920	
Andalusia City Hospital	Gen								
Covington County Hosp	Gen	County	20	15	2	Yes	R N	1920	
Anniston 22340—Calhoun Co	Gen	City	70	40	4	No	Lay	1930	
Garner Hospital	Gen	Army	50	10		Yes	M D	1917	
Station Hospital									
Atmore 3038—Faulkner Co	Gen	Indep	20	10	2	No	R N	1929	
Atmore General Hospital									
Bellamy 317—Sumter Co	Gen	Indiv	16	6	2	No	M D	1920	
Bellamy Hospital									
Bessemer 20721—Jefferson Co	Gen	Indep	70	40	10	No	R N	1923	
Bessemer General Hosp									
Birmingham 20678—Jefferson Co	Gen	Indiv	50	10	8	No	R N	1929	
Alabama General Hospital									
Birmingham Baptist Hos	Gen	Church	120	60	12	No	Lay	1922	
Children's Hospital	Gen	Indiv	50	32		Yes	R N	1912	
Corgas Hotel Hospital	Gen	Church	52	4	10	No	Lay	1920	
(Baptist Ho pital)	Gen	Indiv	10	2		No	M D	1920	
Hill Crest Sanitarium	N&M	County	200	70	40	Yes	Lay	1880	
Hillman Hospital	Gen	County	100	88		No	M D	1921	
Jefferson Sanatorium	Gen	Indiv	210	70	9	Yes	R N	1916	
Norwood Hosp tal	Gen	Church	11	7		No	R N	1900	
St Vincent's Hospital	Gen	Church	140	60	20	No	M D	1910	
South Highlands Infirmary	Gen	Part							
Brown 2818—Faulkner Co	Gen	Indiv	20	16	3	No	R N	1922	
Brewton Memorial Hosp									
Clanton 184—Chilton Co	Gen	Indep	20	13	2	Yes	R N		
Central Alabama Ho p	Gen								
Decatur 1893—Morgan Co	Gen	Indep	44	23	2	No	R N	1921	
Benevolent Society Ho p	Gen								
Demopolis 4037—Marengo Co	Gen	Indiv	14	2	4	No	M D	1910	
Hand Balley Hospital									
Dothan 16046—Houston Co	Gen	Indiv	40	17	6	No	P N	1916	
Dr M S Davis's Private Hospital	Gen	Part	70	2		No	P N	1917	
Fraser Ellis Hospital	Gen	Indiv	4	4		Yes	R N	1913	
Moody Hospital	Gen								
East Tallapoosa 2040—Tallapoosa Co	Gen	Indep	18	2	1	No	P N	1922	
Community Hospital									
Enterprise 3702—Coffee Co	Gen	County	44	4	2	Yes	R N	1924	
Coffee County Mem Ho p	Gen								
Fufala 1008—Barbour Co	Gen	Indiv	40	3		Yes	P N	1920	
Britt Infirmary	Gen	Indiv	40	3		No	R N	1924	
Salter Hospital									
Fairfield 11039—Jefferson Co	Gen	Indiv	40	17	6	No	P N	1916	
Employees Hosp of the									
Tennee Coal Iron and									
Railroad Company	Indu	Indu							
Fairhope 1749—Baldwin Co	Gen	Ind p	1		4	Yes	M D	1921	
Bay View Sanatorium									
Florida 280—Covington Co	Gen	Indiv	40	18	3	No	R N	1921	
Young Infirmary and Lake	Gen								
View Ho pital									
Florence 11729—Audubon Co	Gen	City	60	4		No	R N	1921	
Eliza Coffee Mem Ho p	Gen								

ARKANSAS—Continued

Related Institutions	Type of Service	Control	Beds	Average Patients	Basins	Outpatient Dept	Supt M D	R N Layman	Year Est
Cummins (Varner P O)—Lincoln Co	Inst l	State	12	6		No	M D	1900	
Arkansas State Penal Hos									
DeQueen 2938—Sevier Co	Gen	Indiv	8	3	1	No	R N	1930	
Archer Hospital									
It Smith 31420—Sebastian Co	Inst l	County	100	40		No	M D	1902	
Sebastian County Hospital									
Little Rock 81679—Pulaski Co	Inst l	State	70	60		No	Lay	1891	
Arkansas Confederate Home									
Arkansas School for the Blind	Inst l	State	11			No	Lay	1880	
Florence Crittenton Home	Mater		40	20		No	Lay	1900	
Cranite Mountain Hospital	Gen	Indiv	11			No	M D	1910	
Mosaic State Hosp (col)	Gen	Frat	0	1		No	M D	1927	
Malvern 5115—Hot Spring Co	Gen	County	10	4	2	No	Lay	1902	
Hot Spring County General Hospital									
Malvern Hospital	Gen	Part	8	8	1	No	Lay	1902	
McGehee 3488—Desha Co	Gen	Indiv	10	1	2	No	M D	1928	
Crayson Hospital									
Newport 4547—Jackson Co	Surg	Indiv	6	4	2	No	M D	1918	
Dr Grav's Sanitarium									
Pine Bluff 20760—Jefferson Co	Gen	Frat	30	6		Yes	M D	1919	
Creant Southern Fraternal Hospital (col)	Gen								
Prescott 3030—Nevada Co	Gen	Indiv	10	4	1	No	M D		
Prescott Hospital									
Rogers 3534—Benton Co	Gen	Indiv	8	2		No	R N	1923	
Home Hospital	Gen	Indiv	10	4		No	R N	1909	
Rogers Sanitarium									
Peavarkana 10764—Miller Co	Gen	Indiv	14	4	2	No	M D	1918	
Jamison Sanitarium (col)									
Tucker 219—Jefferson Co									
Arkansas State Penitentiary									

ALABAMA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt M D	R N Layman	Year Est
Cad den 24042—Etowah Co									
Holy Name of Jesus Hos pital	Gen	Church	20	10	5	No	R N		1921
Rails Sanatorium	Gen	Indiv	60	20	5	Yes	Lay		1900
Greensboro 1790—Hale Co									
Greensboro Ho pital	Gen	Indep	14	4	1	No	R N		1924
Greenville 3098—Butler Co									
Sper Hospital	Gen	Indiv	70	7	5	Yes	R N		1923
Stabler Infirmary	Gen	Indiv	18	8	1	No	M D		1924
Gurley 531—Madison Co									
E O Williamson Ho pital	Gen	Indiv	14	5	1	No	Lay		1923
Huntsville 11554—Madison Co									
Huntsville Hospital	Gen	City	70	30	10	No	R N		1901
Jackson 1888—Clarke Co									
South Alabama Infirmary	Gen	Indep	20	6	2	No	R N		1924
Jasper 5313—Walker Co									
Walker County Ho pital	Gen	Indep	60	23	4	Yes	R N		1924
Langdale 510—Chamber Co									
Langdale Hospital	Surg	Indep	14	4		No	R N		1910
Mobile 6802—Mobile Co									
City Hospital	Gen	City	100	100	15	Yes	R N		1880
Mobile Co Tuber Sanit	TB	Indep	74	48		No	R N		1924
Mobile Infirmary	Gen	In dep	60	20	1	No	R N		1910
Providence Infirmary	Gen	Church	100	50	8	No	R N		1888
U S Marine Ho pital	Gen	U S H S	90	60		Yes	M D		1880
Montgomery 6000—Montgomery Co									
Highland Park Sanat Co	Gen	Indiv	40	1		Yes	M D		1924
Laura Hill Ho pital	Gen	Part	0			No	R N		1880
Montgomery Mem Ho p	Gen	Church	1			No	Lay		1924
Montgomery Tuler Sanat TB	Gen	Indep	60			No	R N		1924
St Margaret's Hospital	Gen	Church	12		1	No	R N		1903
Station Ho pital	Gen	Army	13	5		No	M D		1917
Mt Vernon 510—Mobile Co									
Searcy Ho pital (col)	N&M	State	12	11		No	M D		1901
Opelika 616—Lee Co									
East Alabama Hospital	Gen	Indep	70	12	3	No	R N		1920
Ozark 310—Dale Co									
Crane Ho pital	Gen	Indiv	18	7	3	No	R N		1924
Prattville 2001—Autauga Co									
Dr Taylor's Private Ho p	Gen	In liv	10	4	2	Yes	R N		1924
Ronoke 403—Randolph Co									
Knight Sanatorium	Gen	In liv	70	12	2	No	M D		1924
Scottboro 2004—Jackson Co									
Hodges Ho pital	Gen	In liv	20	10	2	No	M D		1924
Selma 18012—Dallas Co									
Alabama Baptist Ho pital	Gen	Church	60	20	5	Yes	Lay		1924
Burwell Infirmary (col)	Gen	Indiv	70	12	3	No	R N		1920
Cold Springs Mem Ho p	Gen	In dep	60		1	No	M D		1924
Naughton Memorial Ho p	Gen	In dep	60			Yes	Lay		1924
Shelby 1001—Colbert Co									
Colbert County Ho pital	Gen	City & Co	70	26	1	No	Lay		1924
Shelby 27411—Tallapoosa Co									
Drummond 1002—Ho p	Gen	In liv	60		10	Yes	M D		1924
Memorial Ho pital	Gen	In dep	60		2	No	Lay		1924
Shelby Infirmary	Gen	In dep	60		2	No	Lay		1924
Talla ga 27411—Tallapoosa Co									
City Ho pital	Gen	In dep	60		4	Yes	Lay		1924
Troy 614—Hale Co									
Lang Memorial Ho pital	Gen	In liv	60		2	Yes	Lay		1924
Lang Ho pital	Gen	In liv	60		1	Yes	Lay		1924
Tuscaloosa 6000—Tuscaloosa Co									
Tuscaloosa Ho pital	N&M	State	60	10	1	No	M D		1924
Prattville 2001—Autauga Co									
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		1924
Prattville Ho pital	Gen	City	60		1	No	Lay		

TYPE OF SERVICE RENDERED

Of the hospitals reporting, 707 have divided their outpatient departments into various clinical services, the remaining 320 are not departmentalized. There is undoubtedly a growing tendency in the former direction. The thirty clinical divisions listed in the questionnaire have been condensed into nine main groups, as follows:

Medicine	Surgery	Obstetrics
Cardiac	Accident and emergency	Gynecology
Dermatology	Ear nose throat	Prenatal
Diagnosis	Eye	Postnatal
Gastro intestinal	Genito urinary	
Mental	Orthopedics	
Metabolism	Proctology	
Allergy		
Pediatrics	Tuberculosis	Physical therapy
	Nutrition	Electrotherapy
		Hydrotherapy
		Massage
Venerical	Ray	Dentistry

The number of outpatient departments conducting such clinical departments, the patients treated, and the visits, are collected in the following table:

Hospital	Type of Service	Control	Beds	Average Patients	Businesses	Outpatient Dept	Supt. R.N. Layman	Year Est
Peterson Hall	Instl	State	76	10	No	MD	1914	
Montgomery 68 0-9—Montgomery Co	Gen	Indiv	3	10	4	No	R N	1919
Internal Hospital (col)	Gen	Indep	3	17	8	No	R N	1881
Hale Infirmary (col)	Gen	Indep	3	17	8	No	R N	1881
Kelly Prison Hospital	Instl	State	7	40	No	MD	1922	
Miriam Jackson Home	Instl	Church	2	8	No	Indiv	1923	
Mountain Creek 375—Chilton Co	Instl	State	0	0	No	MD	1900	
Jefferson Manly Walker Soldiers Home	Instl	State	0	0	No	MD	1900	
Selma 18 012—Dallas Co	Instl	Church	6	5	No	Indiv	1890	
Alabama Methodist Orphanage Hospital	Instl	Church	6	5	No	Indiv	1890	
Talladega 118—Talladega Co	Instl	State	24	12	No	Indiv	1898	
Deaf and Blind	Instl	Indep	20	7	1	No	R N	1910
Goodnow Hospital (col)	Instl	State	8	10	No	MD	1912	
Wetumpka 2 37—Cherokee Co	Instl	State	8	10	No	MD	1912	
State Convict Tuber Hosp	Instl	State	8	10	No	MD	1912	
Summary for Alabama			Number	Beds	Patients	Businesses		
Hospitals and sanatoriums			78	979	729	399		
Related Institutions			21	526	21	61		
Totals			99	1505	740	460		
Refused registration			2	50				

ARIZONA

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Businesses	Outpatient Dept	Supt. R.N. Layman	Year Est
Ajo 0-0—Pima Co	Indus	Indus	30	13	5	Yes	MD	1916
New Cornelia Miner Hosp	Indus	Indus	45	12	6	No	MD	1903
Bisbee 8 023—Cochise Co	Indus	Indus	3	17	6	No	MD	1890
Calumet & Arizona Hosp	Gen	Indiv	2	10	5	Yes	MD	1900
Copper Queen Hospital	Gen	County	40	2	1	No	Indiv	1911
Douglas 9 698—Cochise Co	Gen	Army	30	4	No	MD	1923	
Calumet Hospital	Gen	County	2	20	5	Yes	MD	1893
Cochise County Hospital	Gen	County	2	20	5	Yes	MD	1893
Station Hospital	Gen	County	2	20	5	Yes	MD	1893
Florence 1 318—Pinal Co	Gen	County	2	20	5	Yes	MD	1893
Pinal County Hospital	Gen	County	2	20	5	Yes	MD	1893
1st Deafness 39—Apache Co	Gen	Indian	100	70	Yes	Lay	1910	
Navajo Indian Gen Hosp	Gen	Indian	4	40	No	Lay	1912	
Navajo Tuber Sanat	Gen	Indian	4	40	No	Lay	1912	
1st Huachuca 1 214—Cochise Co	Gen	Army	60	24	Yes	MD	1880	
Station Hospital	Gen	Army	60	24	Yes	MD	1880	
Ganado 34—Apache Co	Gen	Church	7	27	Yes	MD	1913	
Sage Memorial Hospital	Gen	Church	7	27	Yes	MD	1913	
Globe 7 157—Gila Co	Gen	County	60	48	No	R N	1908	
Gila County Hospital	Gen	County	60	48	No	R N	1908	
Indian Wells 28—Navajo Co	Gen	Church	18	9	6	Yes	R N	1912
Good Samaritan Hospital	Gen	Church	18	9	6	Yes	R N	1912
Jerome 4 0-2—Yavapai Co	Indus	Indus	52	31	4	Yes	MD	1916
United Verde Hospital	Indus	Indus	52	31	4	Yes	MD	1916
Keams Canyon 36—Navajo Co	Gen	Indian	40	24	4	Yes	Lay	1913
Hopi Hospital	Gen	Indian	40	24	4	Yes	Lay	1913
Mingman 2 0-0—Mohave Co	Gen	County	3	9	4	No	Lay	1922
Mohave County Hospital	Gen	County	3	9	4	No	Lay	1922
Leupp 58—Coconino Co	Gen	Indian	0	20	2	Yes	MD	1908
Leupp School and Agency Hospital	Gen	Indian	0	20	2	Yes	MD	1908
Mesa 3 711—Maricopa Co	Gen	Indep	2	9	2	No	R N	1920
South Side District Hosp	Gen	Indep	2	9	2	No	R N	1920
Miami 7 693—Gila Co	Indus	Indus	40	22	4	Yes	MD	1910
Miami Inspiration Hosp	Indus	Indus	40	22	4	Yes	MD	1910
Mohave City 100—Mohave Co	Gen	Indian	18	10	No	MD	1890	
Ft Mohave General Hosp	Gen	Indian	18	10	No	MD	1890	

Following is a summary of statistics covering both the hospitals and sanatoriums and the related institutions:

	Hospitals	Beds	Businesses	Average Patients
Hospitals and sanatoriums	5,344	898,012	47,392	724.94
Related Institutions	1,375	57,827	2,192	28.49
Totals registered	6,719	955,839	49,584	763.43

CLASSIFICATION

(a) Hospitals and Sanatoriums, (b) Related Institutions—In this issue for the first time the list of hospitals registered by the American Medical Association, beginning on page 1023 is given in two sections (a) 5,344 hospitals and sanatoriums, and (b) 1,375 related institutions.

The related institutions, because of their special or limited nature, do not deserve to be regarded as hospitals but are, so far as we know, entirely ethical and render a needed nursing or medical service to their communities.

Among the related institutions will be noted some that bear the name of general hospitals. The majority of these have been registered by the American Medical Association.

Western Navajo Indian School Hospital			Gen	Indian	41	16	Yes	Lay	1916	
Fucson 32 506—Pima Co			FB	Indiv	33	18	No	Lay	1922	
Harfield Sanatorium			Gen	Indiv	50	20	Yes	MD	1906	
Desert Sanatorium			Gen	County	40	36	No	R N	1920	
Pima County Hospital			Gen	County	40	36	No	R N	1920	
St Luke's in the Desert Sanatorium			IB	Church	2	22	No	Lay	1910	
St Mary's Hosp & Sanat			Gen	Church	100	68	14	No	R N	1890
Southern Methodist Hospital and Sanatorium			Gen	Church	83	47	12	No	R N	1900
U S Veterans Hospital			TB	VetBur	261	245	Yes	MD	1920	
Valentine 168—Mohave Co			Gen	Indian	18	7	No	Lay	1914	
Truxton Canon Indian Hosp			Gen	Indian	18	7	No	Lay	1914	
Whipple—Yavapai Co			Gen	VetBur	600	520	No	MD	1920	
U S Veterans Hospital			Gen	VetBur	600	520	No	MD	1920	
Whitewater 2—Navajo Co			Gen	Indian	60	18	2	Yes	MD	1910
Ft Apache Indian Hosp			Gen	Indian	60	18	2	Yes	MD	1910
Williams 2 166—Coconino Co			Indus	Indiv	12	4	2	No	MD	1890
Williams Hospital			Indus	Indiv	12	4	2	No	MD	1890
Yuma 4 89—Yuma Co			Gen	Indian	28	10	Yes	Lay	1900	
Ft Yuma Indian Hospital			Gen	Indian	28	10	Yes	Lay	1900	
Yuma General Hospital			Gen	Indep	60	20	5	No	R N	1910
Related Institutions										
Clifton 2 0—Crenshaw Co			Indus	Indus	10	1	3	No	MD	1921
Phelps Dodge Hospital			Indus	Indus	10	1	3	No	MD	1921
Flagstaff 3 891—Coconino Co			Instl	County	17	8	No	Lay	1900	
Coconino County Hospital			Indus	Indiv	1	0	No	MD	1910	
Merced Hospital			Indus	Indiv	1	0	No	MD	1910	
Florence 1 118—Pinal Co			Instl	State	28	16	No	MD	1900	
Arizona State Prison Hosp			Instl	State	28	16	No	MD	1900	
Ft Apache 08—Navajo Co			Instl	State	28	16	No	MD	1900	
Theodore Roosevelt School Hospital			Instl	Indian	30	7	Yes	Lay	1920	
Hayden 2 570—Gila Co			Indus	Indus	12	4	No	MD	1917	
Hayden Hospital			Indus	Indus	12	4	No	MD	1917	
McNary 114—Apache Co			Indus	Indus	15	1	Yes	MD	1924	
McNary Hospital			Indus	Indus	15	1	Yes	MD	1924	
Phoenix 48 118—Maricopa Co			Gen	Indiv	30	14	No	Lay	1920	
Desert Park Sanatorium			TB	Indiv	30	14	No	Lay	1920	
Harrisholm			Conv	Indiv	8	8	No	Lay	1927	
Helen Lee Sanatorium			TB	Indiv	8	8	No	R N	1921	
Maricopa County Farm			Instl	County	60	10	No	MD	1890	
Monte Vista Lodge			TB	Part	1	15	No	R A	1922	
Roanoke Sanatorium			IB	Indiv	2	10	No	Lay	1900	
St Luke's Home			IB	Church	7	44	No	Lay	1900	
Shady Lawn Sanatorium			FB	Indiv	20	20	No	Lay	1910	
Sunny Rest Sanatorium			TB	Indiv	30	15	No	Lay	1916	
Valley View Sanatorium			TB	Indiv	20	12	No	R N	1919	
Prescott 5 517—Yavapai Co			Instl	State	10	6	No	Lay	1911	
Arizona Pioneers Home			Instl	State	10	6	No	Lay	1911	
St Luke's in the Mountains			TB	Church	50	40	No	Lay	1921	
Yavapai County Hospital			Instl	County	75	58	4	No	Lay	1880
Scottsdale 500—Maricopa Co			Gen	Indiv	2	12	No	Lay	1924	
Witt's Desert Home			TB	Indiv	2	12	No	Lay	1924	
Tucson 32 506—Pima Co			FB	Part	3	27	No	R N	1920	
Anson Rest Home			TB	Indiv	30	18	No	Lay	1920	
Clark's Rest Home			TB	Indiv	30	18	No	Lay	1920	
Comstock Hospital			TB	Indep	2	20	No	Lay	1916	
Cottage Sanatorium			IB	Indiv	20	18	No	R N	1920	
Fairview Sanatorium			TB	Indiv	30	16	No	R N	1920	
Hillcrest Sanatorium			TB	Indiv	32	20	No	Lay	1922	
Wickenburg 7-4—Maricopa Co			Gen	Indiv	10	3	3	No	MD	1928
Wickenburg Hospital			Gen	Indiv	10	3	3	No	MD	1928
Summary for Arizona										
Hospitals and sanatoriums			Number	Beds	Patients	Businesses				
			50	4,110	2,781	175				
Related Institutions			2	722	440	10				
Totals			82	4,837	3,221	185				
Refused registration			2	32						

ARKANSAS—Continued

Related Institutions	Type of Service	Control	Beds	Average Patients	Bathsets	Outpatient Dept	Supt. M. D.	R. N. Layman	Year Est
Cummins (Warner P O) —Lincoln Co	Inst l	State	12	6	No	M D	190		
Arkansas State Penal Hos	Inst l	State	12	6	No	M D	190		
DeQuen 298—Sevier Co	Gen	Indiv	8	3	1	No	R N	1930	
Archer Hospital	Gen	Indiv	12	80	No	M D	1892		
1 t Smith 31 42—Sebastian Co	Inst l	County	7	6	No	I N	1901		
Sebastian County Hospital	Inst l	County	12	80	No	M D	1892		
Little Rock 81 69—Pulaski Co	Inst l	State	7	6	No	I N	1901		
Arkansas Confederate Home	Inst l	State	7	6	No	I N	1901		
Arkansas School for the Blind	Inst l	State	11	1	No	I N	1899		
Florence Crittenton Home	Water	Indep	40	2	No	I N	1901		
Granite Mountain Hospital	Gen	Indiv	19	1	No	M D	1910		
Mosaic State Hosp (col) •	Cin	Frat	0	1	No	M D	1927		
Malvern 511—Hot Spring Co	Gen	County	10	4	2	No	I N	1922	
Hot Spring County General Hospital	Gen	Part	8	8	1	No	Lay	1922	
Malvern Hospital	Gen	Part	8	8	1	No	Lay	1922	
McGhee 3 48—Desha Co	Gen	Indiv	10	1	2	No	M D	1918	
Crayson Hospital	Gen	Indiv	10	1	2	No	M D	1918	
Newport 4 747—Jackson Co	Gen	Indiv	6	4	2	No	M D	1918	
Dr Gray s Sanitarium	Surg	Indiv	6	4	2	No	M D	1918	
Pine Bluff 20 60—Jefferson Co	Gen	Indiv	30	1	1	No	M D	1910	
Great Southern Fraternal Hospital (col)	Gen	Frat	30	1	1	No	M D	1910	
Prescott 0 03—Nevada Co	Cen	Indiv	10	4	1	No	M D		
Prescott Hospital	Cen	Indiv	10	4	1	No	M D		
Rogers 3 74—Benton Co	Gen	Indiv	8	1	2	No	R N	1903	
Home Hospital	Gen	Indiv	10	4	2	No	R N	1909	
Rogers Sanitarium	Gen	Indiv	10	4	2	No	R N	1909	
Lexarkana 10 764—Miller Co	Gen	Indiv	14	4	2	No	M D	1918	
Jamison Sanitarium (col)	Gen	Indiv	14	4	2	No	M D	1918	
Tucker 210—Jefferson Co	Inst l	State	20	10	No	M D	1910		
Arkansas State Penitentiary Hospital	Inst l	State	20	10	No	M D	1910		
Summary for Arkansas									
Number		Beds		Patients		Bathsets		Inlets	
19		507		2,0		20			
Totals		7 896		1 842		80			
Refused registration		1 0				16			

CALIFORNIA

[illegible]

Key to symbols and abbreviations is on page 103

CALIFORNIA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basins	Outpatient Dept	Supt R N, Layman	Year Est
Burbank 16 662—Los Angeles Co	Gen	Indiv	36	2	12	Yes	MD	1900
Burbank Hospital								
Calverley, 8 299—Imperial Co	Gen	Part	10	5	No	MD		1928
Gregg Brothers Clinic and Hospital								
Carmel 2 260—Monterey Co	Gen	Indiv	14	9	6	No	R N	1927
Carmel Hospital								
Grace Deere Velle Metabolic Clinic	Chron	Indep	2	New	No	R N		1930
Chico 7 961—Butte Co	Gen	Indiv	32	20	6	No	R N	1913
Enloe Hospital								
Evans 1 316—Fresno Co	Gen	Indiv	11	7	2	No	MD	1906
McMurtry Sanitarium								
Colfax 912—Placer Co	TB	Indep	20	18	No	I ay		1921
Bushnell Sanatorium	IB	Indiv	60	40	No	MD		1903
Colfax Hospital								
Colfax School for the Tuberculous	TB	Indiv	100	80	No	MD		1908
Compton 12 516—Los Angeles Co	N & M	Indep	130	70	No	MD		1915
Compton Sanitarium								
Las Campanas Hospital	Gen	Indep	50	28	10	No	MD	1927
Corona 7 018—Riverside Co	Gen	Indiv	10	5	4	No	R N	1921
Corona Hospital								
Coronado 7 425—San Diego Co	Gen	Arm	2			Yes	MD	1917
Station Hospital								
Covina 2 774—Los Angeles Co	Gen	Part	40	30	12	No	R N	1922
Covina Hospital								
Culver City 5 591—Los Angeles Co	N & M	Indiv	40	30	No	I ay		1920
St Erno Sanitarium								
Dorris 762—Siskiyou Co	Gen	Indiv	70	2	3	No	R N	1922
Dorris Hospital								
Duarte 620—Los Angeles Co	N & M	Part	5	70	No	I ay		1921
Palm Grove Sanitarium								
Sanatorium of the Jewish Consumptive Relief Assn	IB	Indep	100	100	No	MD		1913
Dunsinuir 2 610—Siskiyou Co	Gen	Indep	20	11		No	MD	1910
Dunsinuir Hosp & Sanit								
LI Centro 8 434—Imperial Co	Gen	Indiv	40	7	No	I ay		1920
LI Centro Hospital								
Idridge 16—Sonoma Co	Men & W	State	2 400	2 288	No	MD		1880
Sonoma State Home								
El Monte 3 479—Los Angeles Co	Water	Indep	100	26	17	No	I ay	
Ruth Protective Home								
Iureka 15 762—Humboldt Co	Gen	Indep	52	30	8	No	I ay	1906
General Hospital								
Humboldt County Hospital	Gen	County	140	140	4	No	I ay	1834
Humboldt County School for the Tuberculous	Gen	County	6	48	No	I ay		1900
St Joseph Hospital	Gen	Church	61	38	12	No	I ay	1910
It Bragg 3 022—Mendocino Co	Gen	Indep	20	13	5	No	MD	1887
Redwood Coast Hospital								
French Camp 248—San Joaquin Co	Gen	County	450	413	30	Yes	MD	1899
San Joaquin Gen Hosp								
Fresno 5 513—Fresno Co	Gen	Indep	100	80	14	No	R N	1900
Burnett Sanitarium								
General Hospital of Fresno County	Gen	County	700	359	1	Yes	MD	1903
Sample Sanitarium	Gen	Indiv	21	18	6	No	R N	1915
St Agnes Hospital	Gen	Church	75	60	19	No	R N	1923
Fullerton 10 800—Orange Co	Gen	Part	13	18	6	No	R N	1917
Fullerton Hospital								
Gilroy 502—Santa Clara Co	Gen	Indep	94	7	6	No	R N	1929
Wheeler Hospital								
Glendale 62 736—Los Angeles Co	Gen	Church	240	170	10	Yes	MD	1900
Glendale Sanit & Hosp								
Physicians and Surgeons Hospital	Gen	Indep	70	4	10	No	R N	1906
Grass Valley 3 817—Nevada Co	Gen	Indiv	20	10	4	No	R N	1907
W C Jones Mem Hospital								
Hanford 7 098—Kings Co	Gen	Indep	30	12	8	No	R N	1905
Hanford Sanitarium								
Kings County Hospital	Gen	County	87	71	3	No	I ay	1924
Sacred Heart Hospital	Gen	Church	20	10	5	No	R N	1914
Hayward 5 530—Alameda Co	Gen	Indiv	16	8	4	No	R N	1913
Hayward Central Hospital								
Healdsburg 2 706—Sonoma Co	Gen	Indep	14	7	6	No	MD	1921
Healdsburg General Hosp								
Hermosa Beach 4 706—Los Angeles Co	Gen	Indep	20	8	7	No	R N	1922
Hermosa Redondo Hospital								
Hobart Mills 516—Nevada Co	Indus	Indus	14	3	3	Yes	MD	1898
Hobart State Co Hosp								
Hollister 3 757—San Benito Co	Gen	County	10	6	3	No	R N	1907
Hazel Hawkins Mem Hosp								
Hollywood—Los Angeles Co	Water	Indiv	24	12	18	No	G N	1923
Benedict Hospital								
Hoopa 20—Humboldt Co	Gen	Indian	40	31	4	No	MD	1917
Hoopa Valley Indian Hos								
Imola—Napa Co	N & M	State	2 900	2 900	No	MD		1890
Napa State Hospital								
Ingleswood 39 450—Los Angeles Co	Gen	Indiv	20	20	8	No	R N	1920
Centinela Hospital								
Keene 164—Hart Co	FB	County	70	75	No	MD		1919
Stoney Brook Retreat								
La Crescenta 1 510—Los Angeles Co	TB	Indep	32	26	No	Lay		1927
Hillcrest Sanitarium								
Kimball Sanitarium	N & M	Indiv	28	18	No	Lay		1923
La Vina—Los Angeles Co	TB	Indep	50	30	No	MD		1909
La Vina								
Lindsay 3 578—Tulare Co	Gen	Indiv	10	7	4	No	G N	1928
Lindsay Sanitarium								
Livermore 3 119—Alameda Co	TB	County	180	175	No	MD		1918
Arroyo Sanatorium								
Hetch Hetchy Hospital	Gen	Cy & Co	40	30	4	Yes	MD	1918
Judson Hospital	Gen	Indiv	15	6	3	No	R N	1924
Livermore Sanitarium	N & M	Indep	123	89	No	MD		1892

CALIFORNIA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt R N, Layman	Year 1st
St Paul's Hospital	Gen	Indiv	10					
U S Veterans Hospital	TB	Vet Bur	318	290	3	No	R N	1927
1011 6 788—San Joaquin Co	Gen	Indiv	15	7	4	No	R N	1911
Dr Buchanan's Sanitarium	Gen	Part	15	6	4	No	R N	1910
Mason Hospital								
10ma Linda 2 500—San Bernardino Co	Gen	Church	150	105	12	Yes	MD	1900
10ma Linda Sanitarium								
Long Beach 147 032—Los Angeles Co	Gen	Indep	100	80	20	Yes	R N	1924
Long Beach Community Hospital	Gen	Church	50	30	10	No	R N	1920
St Mary's Long Beach Hos	Gen	Indep	260	145	40	Yes	I ay	1900
Seaside Hospital								
Los Angeles 1 234 018—Los Angeles Co	N & M	Indiv	1	12	No	I ay		1909
Bank's Place Sanitarium	N & M	Indep	100	88	Yes	MD		1907
Barlow Sanatorium	TB	Indep	100	88	20	Yes	I ay	1898
California Hospital	Gen	Church	277	278	70	Yes	R N	1909
Cedars of Lebanon Hos	Gen	Indep	240	100	40	Yes	R N	1901
Children's Hospital	Chil	Indep	240	110	Yes	R N		1901
Dunbar Hospital (col)	Gen	Indep	15	4	4	No	R N	1923
130 and 131 Hospital	FT & T	Indep	20	10	Yes	MD		1922
French Hospital	Gen	Indep	50	20	20	No	R N	1920
Golden State Hospital	Gen	Indiv	70	40	Yes	MD		1900
Hollywood Clara Barton Memorial Hospital	Gen	Indep	224	186	60	No	MD	1914
Hospital of the Good Samaritan	Gen	Church	200	242	40	Yes	R N	1880
Lincoln Hospital	Gen	Indep	25	17	8	No	R N	1910
Los Angeles County General Hospital (Litt No 11)	Gen	County	1 402	1 300	40	Yes	MD	1890
Los Angeles County Juvenile Hall Hospital	N & M	County	124	80	No	Lay		1929
Los Angeles 1316—Los Angeles Co	Water	Indiv	21	11	21	No	Lay	1920
Los Angeles Water Cottage	Water	Indep	28	16	28	No	Lay	1907
Los Angeles Sanitarium	Gen	Indiv	20	11	No	MD		1910
Methodist Hospital of Southern California	Gen	Church	200	143	40	Yes	Lay	1909
Orthopaedic Hosp School	Ortho	Indep	80	76	Yes	R N		1922
Queen of Angels Hospital	Gen	Church	110	80	24	No	I ay	1904
Rosevelt Hospital	Gen	Indiv	84	20	No	I ay		1914
St Vincent's Hospital	Gen	Church	200	126	60	No	R N	1886
Santa Fe Coast Lines Hospital	Indus	Indus	100	127	Yes	I ay		1903
Southern California Japanese Hospital	Gen	Indep	30	12	No	R N		1915
Southern California Sanit	Chron	Indiv	60	25	No	R N		1910
Southwest General Hosp	Gen	Indiv	20	20	Yes	R N		1920
Terry Sanitarium Hospital	Gen	Indep	14	10	6	No	MD	1916
Tubercular Jewish Fraternity Home	TB	Indep	60	30	No	MD		1891
White Memorial Hosp	Gen	Church	105	90	23	Yes	MD	1917
Los Gatos 3 116—Santa Clara Co	TB	Indiv	60	40	No	MD		1914
Oak's Sanitarium								
Madera 4 660—Madera Co	Gen	County	0	20	7	No	R N	1893
Madera County Hospital	Gen	Indiv	10	14	5	No	R N	1900
Madera Sanitarium								
Manor—Marin Co	TB	Indep	42	42	No	R N		1910
Arcadia Sanitarium								
Mare Island 410—Solano Co	Gen	Nav	784	780	Yes	MD		1884
U S Naval Hospital								
Martinez 6 000—Contra Costa Co	Gen	County	150	120	2	No	Lay	1880
Contra Costa County Hosp								
Marysville 1 760—Yuba Co	Gen	Indiv	33	20	9	No	R N	1905
Rideout Memorial Hospital								
McCloud 170—Sierra Co	Indus	Indus	32	8	6	No	MD	1906
McCloud Hospital								
Merced 7 066—Merced Co	Gen	County	200	170	10	No	Lay	
Merced County Hospital	Gen	Part	10	20	7	No	R N	1901
Merced Falls 63—Merced Co	Indus	Indus	14	5	No	MD		1912
Yosemite Hospital								
Modesto 13 840—Stanislaus Co	Gen	Indiv	10	20	7	No	R N	1910
McPheters Hospital	Gen	Indiv	40	22	8	No	R N	1919
Robertson Hospital	Gen	Church	21	8	12	No	Lay	1900
St Mary's Hospital	Gen	County	167	147	10	Yes	Lay	1890
Stanislaus County Hosp								
Monrovia 10 800—Los Angeles Co	TB	Indep	134	107	No	MD		1903
Pottenger Sanit & Clinic for Diseases of the Lungs and Throat								
Monterey 9 141—Monterey Co	Gen	Indiv	14	10	3	No	R N	1922
El Adobe Hospital	Gen	Indep	38	10	6	Yes	R N	1920
Monterey Hospital	Gen	Army	54	24	No	MD		1902
Station Hospital	Gen							
Monterey Park 6 006—Los Angeles Co	Gen	Indep	33	16	7	No	R N	1917
Garfield Hospital								
Murphy 563—Calaveras Co	TB	County	134	110	No	MD		1923
Bret Hart Sanatorium								
Napa 6 437—Napa Co	Gen	Indep	35	28	6	No	R N	1929
Victory Hospital								
National City 7 301—San Diego Co	Gen	Part	12	6	No	R N		1913
Flora Sanitarium								
Paradise Valley Sanitarium and Hospital	Gen	Church	100	72	7	Yes	MD	1904
Nevada City 1 701—Nevada Co	Gen	County	72	52	No	Lay		1881
Nevada County Hospital								
Newman 1 769—Stanislaus Co	Gen	Indiv	12	4	4	No	MD	1920
Newman Hospital								
Norwalk 1 517—Los Angeles Co	N & M	State	2 040	1 867	Yes	MD		1917
Norwalk State Hospital								
Oakland 284 063—Alameda Co	N & M	Indiv	20	14	No	Lay		1916
Anderson's Sanatorium								
Children's Hospital of the East Bay	Chil	Indep	80	20	Yes	R N		1913
Fabiola Hospital	Gen	Indep	105	91	50	Yes	Lay	1846

CALIFORNIA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinsets	Outpatient Dept	Supt M D R N Layman	Year Est	
Highland Hospital of Alameda County**	Gen	County	46	280	20	No	M D	1926	
Peralta Hospital	Gen	Indep	129	76	30	No	Lay	1928	
Providence Hospital	Gen	Church	242	90	29	Yes	R N	1903	
St Anthony's Hospital	Gen	Indiv	67	78	20	No	R N	1905	
Samuel Merritt Hospital**	Gen	Indep	142	105	17	No	Lay	1905	
Olive View—Los Angeles Co	Gen	County	812	704		No	M D	1920	
Olive View Sanatorium	TB	County	812	704		No	M D	1920	
Orange 8066—Orange Co	Gen	County	263	190	12	Yes	M D	1914	
St Joseph Hospital	Gen	Church	100	45	25	No	R N	1929	
Oxnard 6285—Ventura Co	Gen	County	263	190	12	Yes	M D	1914	
St John's Hospital	Gen	Church	50	22	12	No	R N	1912	
Palo Alto 1362—Santa Clara Co	Gen	City	76	25	7	No	Lay	1905	
Palo Alto Hospital	Gen	City	76	25	7	No	Lay	1905	
U S Veterans Hospital	N CM	VetBur	1010	960		No	M D	1919	
Pasadena 76086—Los Angeles Co	Gen	Indiv	16	7	6	No	M D	1921	
Dr Kenner's Hospital	Gen	Indiv	82	70		No	M D	1921	
Las Encinas	Gen	Indiv	82	70		No	M D	1921	
Pasadena Hospital**	Gen	Indiv	187	127	24	Yes	R N	1892	
Woman's Hospital	Mater	Indiv	14	7	14	No	R N	1903	
Paso Robles 253—San Luis Obispo Co	Gen	Indiv	10	5	2	No	M D	1930	
Paso Robles General Hosp	Gen	Indiv	10	5	2	No	M D	1930	
Patton 215—San Bernard no Co	N & M	State	3250	3226		No	M D	1893	
Patton State Hospital*	N & M	State	3250	3226		No	M D	1893	
Petaluma 824—Sonoma Co	Gen	Indiv	24	10	6	No	R N	1906	
Petaluma General Hospital	Gen	Indiv	24	10	6	No	R N	1906	
Placerville 227—El Dorado Co	Gen	Indiv	22	10	4	No	M D	1904	
Placerville Sanatorium	Gen	Indiv	22	10	4	No	M D	1904	
Point Loma 117—San Diego Co	Gen	Army	32	20		No	M D	1906	
U S Army Station	Gen	Army	32	20		No	M D	1906	
Pomona 20804—Los Angeles Co	Gen	Indiv	82	29	17	No	R N	1904	
Pomona Valley Community Hospital	Gen	Indiv	82	29	17	No	R N	1904	
Portola 1012—Plumas Co	Gen	Indiv	45	30	4	No	M D	1912	
Western Pacific Railroad Hospital	Indus	Indus	45	30	4	No	M D	1912	
Randsburg 443—Kern Co	Gen	Indiv	10	6	1	No	M D	1927	
Rand District Hospital	Gen	Indiv	10	6	1	No	M D	1927	
Red Bluff 3517—Tehama Co	Gen	Church	30	15	5	No	Lay	1908	
St Elizabeth's Mercy Hosp	Gen	Church	30	15	5	No	Lay	1908	
Iehama County Hospital	Gen	County	61	47		No	M D	1886	
Redding 4188—Shasta Co	Gen	Indiv	20	10	3	No	M D	1915	
Dozier Sanitarium	Gen	Indiv	20	10	3	No	M D	1915	
St Caroline Sanitarium	Gen	Indiv	22	10	5	No	M D	1906	
Redwood City 8062—San Mateo Co	Gen	Indiv	75	61		No	R N	1916	
Canyon Sanatorium	TB	Indiv	44	43		Yes	R N	1927	
San Francisco Health Farm	Conv	Cy & Co	44	43		Yes	R N	1927	
Richmond 20093—Contra Costa Co	Gen	Indiv	21	18	7	No	R N	1918	
Cottage Hospital	Gen	Indiv	50	13	15	No	R N	1919	
Hospital Richmond	Gen	Indiv	50	13	15	No	R N	1919	
Riverside 29666—Riverside Co	Gen	Indiv	60	30	18	No	R N	1901	
Riverside Community Hospital	Gen	Indiv	60	30	18	No	R N	1901	
Sherman Institute	Gen	Indian	60	30		Yes	Lay	1905	
Roanoke 2717—Los Angeles Co	Gen	Indiv	12	6		No	M D	1924	
Alhambra Sanatorium	N CM	Indiv	12	6		No	M D	1924	
Rose 1355—Marin Co	Gen	Indiv	60	30	9	No	Lay	1910	
Ross General Hospital	Gen	Indiv	60	30	9	No	Lay	1910	
Sacramento 93760—Sacramento Co	Gen	Church	124	85	26	No	R N	1899	
Mater Misericordiae Hos	Gen	Church	124	85	26	No	R N	1899	
Sacramento Hospital**	Gen	County	281	175	118	30	Yes	M D	1903
Sutter Hospital	Gen	Indiv	175	118	30	No	Lay	1903	
Salinas 10202—Monterey Co	Gen	Indiv	18	10	5	No	R N	1907	
Murphy Hospital	Gen	Indiv	23	18	8	No	R N	1912	
Salinas Valley Hospital	Gen	Indiv	23	18	8	No	R N	1912	
San Andreas—Calaveras Co	Gen	Indiv	12	4	2	Yes	M D	1906	
San Andreas Hospital	Gen	Indiv	12	4	2	Yes	M D	1906	
San Bernardino 37451—San Bernardino Co	Gen	County	299	250	16	Yes	M D	1880	
San Bernardino General Hospital**	Gen	County	299	250	16	Yes	M D	1880	
San Clemente 667—Orange Co	Gen	Indiv	38	15	12	Yes	M D	1925	
San Clemente Clinic and Hospital	Gen	Indiv	38	15	12	Yes	M D	1925	
San Diego 14,090—San Diego Co	Gen	Indiv	37	20	9	No	R N	1918	
McCulloch Hospital	Gen	Church	37	161	40	No	Lay	1890	
Mersey Hospital	Gen	Church	37	161	40	No	Lay	1890	
San Diego County General Hospital**	Gen	County	637	491	34	Yes	Lay	1900	
Scripps Memorial Hosp	Gen	Indiv	50	26	6	No	R N	1910	
Scripps Metabolic Clinic	Metab	Indiv	25	15		No	M D	1914	
U S Naval Hospital**	Gen	Navy	863	605		Yes	M D	1911	
San Fernando 747—Los Angeles Co	Gen	Indiv	50	25		No	M D	1913	
Indep Order of Foresters	Gen	Indiv	12	6		No	R N	1906	
Calif Tubercular Sanit	TB	Part	230	255		No	R N	1906	
San Fernando Hospital	Gen	Indiv	12	6		No	R N	1906	
U S Veter Hosp No 104 TB	TB	VetBur	230	255		No	M D	1906	
San Francisco 634704—San Francisco Co	Gen	Indiv	140	60		No	Lay	1900	
Dante Sanatorium	Gen	Indiv	140	60		No	Lay	1900	
Franklin Hospital	Gen	Indiv	140	60		No	Lay	1900	
French Hospital	Gen	Indiv	140	60		No	Lay	1900	
Green's Eye Ho pital	Gen	Indiv	140	60		No	Lay	1900	
Hospital for Children**	Gen	Indiv	140	60		No	Lay	1900	
Letterman General Hosp**	Gen	Indiv	140	60		No	Lay	1900	
Mary's Help Hospital**	Gen	Indiv	140	60		No	Lay	1900	
Mt Zion Ho pital**	Gen	Indiv	140	60		No	Lay	1900	
St Elizabeth's Infant Hosp	Gen	Indiv	140	60		No	Lay	1900	
St Francis Hospital**	Gen	Indiv	140	60		No	Lay	1900	
St Joseph's Hospital**	Gen	Indiv	140	60		No	Lay	1900	
St Luke's Hospital**	Gen	Indiv	140	60		No	Lay	1900	
St Mary's Hospital**	Gen	Indiv	140	60		No	Lay	1900	
San Franc co Hospital**	Gen	Indiv	140	60		No	Lay	1900	
Shriners Ho pital for Crip	Ortho	Part	60	60		Yes	P N	1925	

Key to symbols and abbreviations is on page 1023

CALIFORNIA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinsets	Outpatient Dept	Supt M D R N Layman	Year Est
Southern Pacific General Hospital*	Indus	Indus	300	20		Yes	M D	1867
Stanford University Hospitals (Including Lane Hospital)**	Gen	Indep	315	219	27	Yes	M D	1893
Sutter Hospital	Gen	Part	60	40		Yes	M D	1925
Union Plant Hosp Bethlehem Shpbuilding Corp	Indus	Indus	20	10		Yes	M D	1907
U S Marine Hosp No 19*	Gen	USPHS	570	285		Yes	M D	1875
Univ of Calif Hosp**	Gen	State	255	172	32	Yes	M D	1907
Sanitarium 41—Napa Co	Gen	Church	140	82	6	No	M D	1878
St Helena Sanit Ho p*	Gen	Church	140	82	6	No	M D	1878
San Jacinto 1346—Riverside Co	Gen	Indian	50	17	6	Yes	M D	1923
Soboba Indian Hospital	Gen	Indian	50	17	6	Yes	M D	1923
San Jose 57651—Santa Clara Co	TB	Indep	25	25		No	M D	1901
Alum Rock Sanatorium	TB	Church	103	65	20	No	R N	1889
O Connor Sanitarium*	Gen	Indep	111	79	20	No	Lay	1925
San Jose Hospital*	Gen	Indep	111	79	20	No	Lay	1925
Santa Clara County Hospital**	Gen	County	434	248	20	Yes	M D	1856
Santa Clara Sanatorium	TB	County	95	95		Yes	M D	
San Luis Obispo 5276—San Luis Obispo Co	Gen	Indiv	20	10	4	No	R N	1907
Mountain View Hospital	Gen	Indiv	20	10	4	No	R N	1907
San Luis Obispo Gen Hosp	Gen	County	60	31	8	Yes	R N	1873
San Luis Sanitarium	Gen	Part	30	14	5	No	R N	1911
San Mateo 13444—San Mateo Co	Gen	County	101	86	6	Yes	M D	1923
Community Hospital of San Mateo County	Gen	County	125	65	24	Yes	M D	1905
Mills Memorial Hospital	Gen	Church	125	65	24	Yes	M D	1905
San Pedro—Los Angeles Co	Gen	Indep	58	53	22	Yes	R N	1899
San Pedro General Hospital	Gen	Indep	58	53	22	Yes	R N	1899
Station Hospital	Gen	Army	2	12		No	M D	1910
U S Ship Relief Hospital	Gen	Navy	500	115		No	M D	1910
San Rafael 8022—Marin Co	Gen	Indiv	45	20	15	No	Lay	1901
San Rafael Cottage Hosp	Gen	Indiv	45	20	15	No	Lay	1901
Santa Barbara 33613—Santa Barbara Co	Gen	Church	85	71	15	Yes	R N	1905
St Francis Hospital**	Gen	Church	85	71	15	Yes	R N	1905
Santa Barbara Cottage Hospital*	Gen	Indep	284	147	37	Yes	Lay	1888
Santa Barbara Gen Hosp*	Gen	County	175	130	10	No	Lay	1880
Santa Cruz 1471—Santa Cruz Co	Gen	Indiv	71	12	10	No	R N	1904
Hanly Hospital	Gen	County	71	12	10	No	R N	1904
Santa Cruz County Hosp	Gen	County	71	12	10	No	R N	1904
Santa Monica 17146—Los Angeles Co	Gen	Indiv	71	36	8	No	Lay	1911
St Catherine's Hospital	Gen	Indiv	91	70	12	No	Lay	1906
Santa Monica Hospital	Gen	Indiv	91	70	12	No	Lay	1906
Windsor Hospital	Gen	Indep	40	18	12	No	M D	1913
Santa Rosa 10636—Sonoma Co	Gen	Indiv	40	12	8	No	R N	1916
General Hospital	Gen	Indiv	40	12	8	No	R N	1916
Mary Jes e Hospital	Gen	Indiv	40	12	8	No	R N	1916
Scott 2074—Humboldt Co	Indus	Indus	7	1	4	No	M D	1907
Scott Hospital	Indus	Indus	7	1	4	No	M D	1907
Selma 3047—Fresno Co	Gen	Indep	14	9	3	No	R N	1909
Selma Sanitarium	Gen	Indep	14	9	3	No	R N	1909
Sonoma 2278—Tuolumne Co	Gen	Indiv	26	12	4	No	M D	1908
Sierra Hospital	Gen	Indiv	26	12	4	No	M D	1908
Sonoma Hospital	Gen	Indiv	26	12	4	No	M D	1908
Tuolumne County Hospital	Gen	County	26	12	4	No	M D	1908
Southgate 1912—Los Angeles Co	Gen	Indep	40	11	18	No	Lay	1925
Suburban Hospital	Gen	Indep	40	11	18	No	Lay	1925
South San Francisco 6192—San Mateo Co	Gen	Indep	25	10	6	No	M D	1918
South San Francisco Hosp	Gen	Indep	25	10	6	No	M D	1918
Spadra 39—Los Angeles Co	Gen	Indiv	92	54		No	M D	1923
State Narcotic Ho pital	Dr & Al	State	92	54		No	M D	1923
Springville—Tulare Co	Joint	TB	100			Yes	Lay	1919
Tulare Kings County	Joint	TB	100			Yes	Lay	1919
Tubercular Hospital	TB	County	100			Yes	Lay	1919
Standard 813—Tuolumne Co	Indus	Indus	2	13		Yes	Lay	1909
Pickering Ho pital	Indus	Indus	2	13		Yes	Lay	1909
Stockton 4700—San Joaquin Co	Gen	Indep	79	69	10	No	R N	1912
Dameron Hospital*	Gen	Indep	79	69	10	No	R N	1912
St Joseph's Home and Ho pital	Gen	Church	10	70	14	No	Lay	1900
Stockton State Ho pital	N CM	State	32	200		No	M D	1911
Sussexville 18—In en Co	Gen	Indiv	75	12	6	No	R N	1910
Riverside Ho pital	Gen	Indiv	75	12	6	No	R N	1910
Talmage 29—Mendocino Co	N CM	State	1774	1		No	M D	18
Mendocino State Ho pital	N CM	State	1774	1		No	M D	18
Torrance 2971—Los Angeles Co	Gen	Indiv	45	23	12	No	R N	1912
Jared Sidney Torrance Memorial Ho pital	Gen	Ind p	45	23	12	No	R N	1912
Tulare 60—Tulare Co	Gen	Indiv	20	10		No	Lay	1910
Belleview Sanitarium	Gen	Indiv	20	10		No	Lay	1910
Tulare County Gen Ho p	Gen	County	20	10		No	Lay	1910
Tulare Ho pital	Gen	County	20	10		No	Lay	1910
Turlock 476—Stanislaus Co	Gen	Church	47	20	8	No	P N	1911
Emmanuel Ho pital	Gen	Church	47	20	8	No	P N	1911
William Collins Ho pital	Gen	Indiv	1	3	8	No	Lay	1911
Ventura 114—Ventura Co	Gen	Indiv	1	3	8	No	Lay	1911
Ho p De Bu na Ventura	Gen	Indiv	1	3	8	No	Lay	1911
Ventura County Ho pital	Gen	County	1	3	8	No	Lay	1911
San Jose 14—Sonoma Co	Gen	Indiv	1	3	8	No	R N	1911
Burnal Ho pital	Gen	Indiv	1	3	8	No	R N	1911
San Jose 14—Tulare Co	Gen	Indiv	1	3	8	No	R N	1911
Kaweah Ho pital	Gen	Indiv	1	3	8	No	R N	1911
Watsonville 18—Santa Cruz Co	Gen	Indiv	25	10	6	No	M D	1910
Watsonville Ho pital	Gen	Indiv	25	10	6	No	M D	1910
Watsonville Ho pital	Gen	Indiv	25	10	6	No	M D	1910
Trinity County Ho pital	Gen	County	1	3	8	No	Lay	1911
Wood 476—Stanislaus Co	Gen	Indiv	1	3	8	No	Lay	1911
Wood Ho pital	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911
Weimer 29—Mendocino Co	Gen	Indiv	1	3	8	No	Lay	1911

CALIFORNIA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt M D R N	Year Est
Willits 1424—Mendocino Co								
Frank R Howard Memorial Hospital	Gen	Indep	10	7	3	No	M D	1928
Woodland 554—Yolo Co								
Woodland Clinic Hospital	Gen	Indep	91	51	10	Yes	M D	1911
Yosemite National Park 200—Mariposa Co								
W B Lewis Hospital	Gen	Ind	17	6	2	No	M D	1914
Yreka 2126—Siskiyou Co								
Siskiyou County General Hospital	Gen	County	50	35	6	Yes	M D	1850
Yuba City 360—Sutter Co								
Sutter County Hospital	Gen	County	48	16	3	Yes	M D	1917
Yuba City Hospital	Gen	Indiv	18	7	1	No	I ay	1923
Related Institutions								
Altadena—Los Angeles Co								
Altadena Hospital	Gen	Part	12	6	6	No	R N	1928
Allures 243—Modoc Co								
Modoc County Hospital	Inst 1	County	28	10		No	M D	1881
Angel Island—Marin Co								
U S Quarantine Station	Iso	Fed	50			No	M D	1890
Artesia 3891—Los Angeles Co								
Resthaven Sanitarium	N & M	Indiv	20	20		No	M D	1927
Azusa 4808—Los Angeles Co								
Children's Open Air Health Camp	TB	Indep	90	81		No	I ay	1916
Physiotherapy Institute and Rural Rest Home	Conv	Indep	30	21		No	I ay	1921
Bakersfield 26015—Kern Co								
R B Rees Hospital	Surg	Indiv	16	10		No	R N	1916
Victory Hospital	Gen	Indiv	12	7		No	I ay	1918
Belmont 984—San Mateo Co								
Chas S Howard Foundation	TB	Indep	20	11		No	M D	1921
Buena Vista 2919—Solano Co								
Station Hospital	Gen	Army	8	1		Yes	M D	1811
Berkeley 87109—Alameda Co								
California State Schools for the Deaf and Blind	Inst 1	State	20	7		No	R N	1863
Bythe 1026—Riverside Co								
Frank Luke Mem Hosp	Gen	County	8	3	6	No	R N	1921
Byron Hot Springs—Contra Costa Co								
Byron Hot Springs Sanit	Conv	Indep	10			Yes	M D	1872
Calexico 6599—Imperial Co								
Calexico Hospital	Gen	Part	12	5		Yes	R N	1911
Claremont 2719—Los Angeles Co								
Claremont Collegis Infirmary	Inst 1	Indep	24			No	M D	1910
Coalition 2551—Fresno Co								
San Joaquin Hospital	Gen	Indiv	10	6		No	G N	1910
Colfax 912—Placer Co								
Brown's Conv Home	TB	Indiv	18	11		No	I ay	1923
Kathlamet Sanatorium	TB	Part	20	14		No	Lay	1919
Sunmount Camp and Preventorium	TB	Indep	19	11		No	M D	1918
Colusa 2116—Colusa Co								
Colusa County Hospital	Inst 1	County	42	29		No	I ay	1877
Coronado 542—San Diego Co								
Coronado Emergency Hosp	Gen	Indiv	12	5	3	No	I ay	1927
Crescent City 1720—Del Norte Co								
Crescent City Hospital	Indus	Indus	17	5	3	No	I ay	1910
Del Norte County Hospital	Inst 1	County	24	10		No	I ay	1890
Decoto—Alameda Co								
Masonic Home Hospital	Inst 1	Frat	40			No	I ay	1898
Delano 2632—Kern Co								
Delano Emergency Hosp	Indus	Indiv	9	4	2	No	I ay	1928
Dinuba 2908—Fulore Co								
Dinuba Sanitarium	Gen	Indiv	10	7	3	No	Lay	1911
Downsville 348—Sierra Co								
Sierra County Hospital	Gen	County	11	10		No	Lay	1860
Duarte 620—Los Angeles Co								
Elliott Rest Ranch	TB	Indiv	31	20		No	I ay	1902
El Cid 89—San Joaquin Co								
El Cid Hospital	Gen	Indiv	6	2	4	No	R N	1926
Elmer 1171—Fresno Co								
Elmer Sanitarium	Gen	Indiv	6	4	2	No	M D	
Glendale 62736—Los Angeles Co								
Arbor Rest Home Sanit	Conv	Indiv	22	17		No	I ay	1912
Hawthorne 6596—Los Angeles Co								
Hawthorne Hospital	Gen	Indiv	10	3	4	No	Lay	1924
Hills 216—Siskiyou Co								
Hills Hospital	Indus	Indus	6	1	1	No	M D	1912
Hollister 3757—San Benito Co								
San Benito County Hosp	Inst 1	County	31	18		No	M D	1897
Indio 184—Riverside Co								
Coachella Valley Hospital	Gen	Indiv	14	8	2	No	M D	1928
Ione 806—Amador Co								
Preston School of Industry	Inst 1	State	50	21		Yes	Lay	1892
Kiene 164—Kern Co								
Kern County Preventorium	TB	County	50	36		Yes	M D	1929
Kingsburg 1323—Fresno Co								
Kingsburg Sanitarium	Gen	Indiv	8	4	3	No	M D	
Laguna Beach 1981—Orange Co								
Laguna Beach Hospital	Gen	Indiv	4	1	2	Yes	M D	1927
La Mesa 2513—San Diego Co								
La Mesa Sanatorium	TB	Indiv	14	6		No	Lay	1926
Lincoln 2694—Placer Co								
Toelin's Sanatorium	N & M	Indiv	10	9		No	R N	1916
Livermore 3119—Alameda Co								
Del Valle Preventorium	TB	County	81	80		No	Lay	1924
Lompoc 2845—Santa Barbara Co								
Celtic Company Hospital	Indus	Indus	8	4		No	M D	1918
Lone Pine 360—Inyo Co								
Lone Pine Hospital	Gen	Indiv	6	2	2	No	R N	1927

CALIFORNIA—Continued

Related Institutions	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt M D R N	Year Est
Long Beach 142012—Los Angeles Co								
Rock Haven Preventorium TB	Indep	Indep	18	15		No	R N	1926
Los Angeles 1234018—Los Angeles Co								
Bolyedre Sanitarium	TB	Indiv	33	11		No	Lay	1915
Brentwood Sanitarium	Conv	Part	13	4		No	M D	1922
Century Sanitarium	Conv	Indiv	23	21		No	Lay	1923
Chase Diet Sanitarium	Conv	Indiv	22	10		No	M D	1917
Ernwood Rest Home	Conv	Indiv	12	9		No	Lay	1921
Goodyear Tire and Rubber Company's Hospital	Indus	Indus	6	1		No	M D	1920
Junior League Convalescent Home for Children	Conv	Indep	12	11		No	R N	1925
Los Angeles Orphans Home Society	Inst 1	Indep	18	4		No	Lay	1888
Los Angeles Receiving Hosp	I merg	City	42	16		No	M D	1885
Los Angeles Smallpox Quarantine Hospital	Iso	City	90	27	8	No	Lay	1863
Los Angeles City Jail Hospital	Vener	City	35	31		No	R N	
Marshall Manor Sanitarium	N & M	Part	20	2		No	Lay	1904
Martin Lee Maternity Hos	Mater	Indiv	10	2	10	No	I ay	1925
Pahl Hospital	Gen	Indiv	15	12		No	R N	1925
Private Home Hospital	Mater	Indiv	6	4	8	No	R N	1917
Resthaven	Conv	Indiv	40	21		No	R N	1912
Rice Maternity Hospital	Mater	Indiv	16	12	16	No	Lay	1917
St Barnabas House	Conv	Church	20	10		No	Lay	1921
St Vincent's Mater Home	Mater	Indep	11	8	11	No	Lay	1922
Salvation Army Truvelove Home	Mater	Church	15	4	25	No	R N	1899
Santa Marta Nat Cottage	Mater	Church	10	7	10	Yes	R N	1927
Southwest Maternity Hosp	Mater	Indiv	9	4	9	No	Lay	1925
Lapley Sanitarium	N & M	Indiv	10	10		No	Lay	1922
Wiltshire Rest Home and Sanitarium	Conv	Part	25	20		No	R N	1901
Los Banos 1875—Merced Co								
Los Banos Hospital	Gen	Indiv	10	10	3	No	G V	1928
Yolton 577—Sierra Co								
Sierra Valley Hospital	Gen	Indiv	10	5	2	No	R N	1917
Manor—Marin Co								
Bothin Convalescent Home for Women and Children	Conv	Indep	75	40		No	R N	1905
Manteca 1614—San Joaquin Co								
Manteca Hospital	Gen	Indiv	8	4	4	No	Lay	1923
Martell 28—Amador Co								
Lafayette Gas & Electric Company Hospital	Indus	Indus	10			Yes	M D	
Marysville 763—Yuba Co								
Yuba County Hospital	Inst 1	County	78	30		No	Lay	1890
Menlo Park 224—San Mateo Co								
Bona Convalescent Home	Conv	Indiv	13	8		No	R N	1906
Minarets—Madera Co								
Central Camp Hospital	Indus	Indus	10	4		No	M D	1923
Monrovia 10890—Los Angeles Co								
Monrovia Sanatorium	TB	Indiv	16	16		No	M D	1922
Dora Sanatorium	TB	Indiv	19	17		No	Lay	1904
Monrovia Sanitarium	TB	Church	21	21		No	Lay	1915
Norumbega Heights Sanat	TB	Indiv	11	11		No	Lay	1920
Montrose 1040—Los Angeles Co								
Dr Utley's Hospital Sanit	Gen	TB Indiv	20	8		No	M D	1923
Mountain View 350—Santa Clara Co								
Mountain View Hospital	Gen	Indiv	7	4	6	No	M D	1901
National Military Home—Los Angeles Co								
National Soldiers Home Hos	Inst 1	Fed	867	540		Yes	M D	1883
Nevada City 1701—Nevada Co								
Nevada City Sanitarium	Gen	Indiv	8	4	6	No	Lay	1910
Newport Beach 2983—Orange Co								
Newport Beach Hospital	Gen	Indiv	5	3	2	No	M D	1927
Oakland 284063—Alameda Co								
Alameda County Receiving Hospital	F merg	County	10	1		No	M D	
Tred Tinch Orphanage	Inst 1	Church	12	4		No	Lay	1891
German Old People's Home	Inst 1	Indep	9	5		No	I ay	1892
Inez Sanitarium	Mater	Indiv	10	4	12	No	Lay	1911
King's Daughters of Calif Home for Incurables	Incur	Church	121	111		No	Lay	1897
Oakland Maternity Hosp	Mater	Indep	17	8	12	No	R N	1910
Salvation Army Women's Home and Maternity Hos	Mater	Church	12	6	24	No	Lay	
Pacific Grove 5548—Monterey Co								
Bayview Hospital	Gen	Indiv	12	4	4	No	R N	1928
Palm Springs 417—Riverside Co								
Dr Henry Reid Clinic and Hospital	Gen	Indiv	10	2		No	M D	1929
Palo Alto 1302—Santa Clara Co								
Student Guild Isolation Hospital for Stanford Univ	Iso	Indep	30	6		No	M D	
Pasadena 7606—Los Angeles Co								
City of Pasadena Isolation Hospital	Iso	City	12	2		No	M D	1923
Fl Nido Pasadena Preventorium	TB	Indep	40	38		Yes	R N	1904
Placerville 2322—Eldorado Co								
El Dorado County Hosp	Inst 1	County	60	30		No	M D	1860
Porterville 5303—Tulare Co								
Mt Whitney Hospital	Gen	Indiv	8	2	4	No	R N	1901
Porterville Hospital and Maternity Home	Gen	Indiv	15	3	2	No	G N	1913
Quincy 1930—Plumas Co								
Plumas Industrial Hospital	Indus	Indiv	5	2		No	M D	1902
Redding 4188—Shasta Co								
Shasta County Hospital	Inst 1	County	90	32	2	No	Lay	1900
Redlands 14177—San Bernardino Co								
Weber Health School	Conv	Indiv	30	21		No	M D	1924
Redwood City 8062—San Mateo Co								
Drexler Hall	Ortho	Indiv	14	13		Yes	Lay	1916

CALIFORNIA—Continued

Related Institutions	Type of Service	Control	Beds	Average Patients	Bassinets	Outpatient Dept	Supt M D	R Layman	Year Est
Reprea 30—Sacramento Co									
California State Prison Hos	Inst l	State	70	42		Yes	M D		1879
Richmond 20 693—Contra Costa Co									
Granda Vista Sanatorium N&M		Indiv	20	10		No	M D		1915
Sacramento 93 750—Sacramento Co									
Emergency Hospital and Dispensary	Emerg	City	7		2	Yes	M D		1890
Southern Pacific Emergency Hospital	Indus	Indus	20	16		Yes	M D		1870
Salinas 10 93—Monterey Co									
Monterey County Hospital and Farm	Inst l	County	90	71		No	Lay		1888
San Diego 147 990—San Diego Co									
Fraser Convalescent Home	Conv	Indiv	16	8		No	R N		1921
Lane Sanitarium	Conv	Indiv	9	5		No	Lay		1978
Mission Valley Hospital	Vener	City	45	14		Yes	M D		1918
San Diego Mun Iso Hosp	Iso	City	30	10		No	M D		1907
San Francisco 634 794—San Francisco Co									
Laguna Honda Home Infirmary	Inst l	City & Co	520	514		No	Lay		1894
Park Sanitarium	N&M	Indep	38	20		No	R N		1917
San Francisco Emergency Hospital Service	Emerg	City & Co	92	48		Yes	M D		1890
San Francisco Home for Incurables Aged and Sick	Inst l	Indep	61	55		No	R N		1907
San Francisco Polyclinic	Gen	Indep	14	9		Yes	M D		1889
San Jose 57 651—Santa Clara Co									
Sunnyhorne Preventorium	TB	County	46	39		Yes	M D		1929
San Leandro 11 456—Alameda Co									
Fairmont Hospital of Alameda County	Inst l	County	400	400		No	Lay		1903
San Mateo 13 444—San Mateo Co									
San Mateo Preventorium	TB	Indep	28	20		No	R N		1920
San Quentin 328—Marin Co									
San Quentin Prison Hosp	Inst l	State	120	115		No	M D		1849
San Rafael 8 022—Marin Co									
Marin County T B Hosp	TB	County	18	8		No	M D		1914
Santa Monica 37 146—Los Angeles Co									
Santa Monica Det Home	Conv	Indiv	10	6		No	R N		1907
Santa Rosa 10 636—Sonoma Co									
Sonoma County Hospital	Inst l	County	108	92	3	No	M D		1883
Saratoga 2 523—Santa Clara Co									
Odd Fellows Home	Inst l	Frat	40	30		No	M D		1893
Spring Garden 120—Plumas Co									
Walker Mining Co Hosp	Indus	Indus	7	2	3	Yes	M D		1920
Stanford University 700—Santa Clara Co									
Stanford Conv Home	Conv	Indep	45	45		No	Lay		1919
Stockton 47 963—San Joaquin Co									
Stockton City Emergency Hospital	Emerg	City	10	5		No	M D		1903
Sugar Pine 73—Madera Co									
Sugar Pine Hospital	Indus	Indus	18	7	2	No	M D		1903
Suisun City 90—Solano Co									
Solano County Hospital	Inst l	County	98	68		No	Lay		1870
Ventura 11 433—Ventura Co									
Ventura School for Girls	Inst l	State	25	5		No	M D		1916
Veterans Home—Napa Co									
Veterans Home Hospital	Inst l	State	180	150		No	M D		1883
Whittier 14 822—Los Angeles Co									
Whittier State School	Inst l	State	20	13		Yes	R N		1899
Willows 2 024—Glenn Co									
Glenn County Hospital	Gen	County	18	12		No	Lay		1898
Summary for California									
Hospitals and sanatoriums	Number		Beds		Patients		Bassinets		
Related Institutions	292		49 304		39 597		2 602		
	180		5 006		3 960		206		
Totals	472		54 310		43 557		2 808		
Refused registration	68		2 100				363		

COLORADO

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Bathing	Outpatient Dept	Sum M D	Laundry	Year
Alamosa 5 107—Alamosa Co									
Lutheran Hospital	Gen	Church	20	1	0	No	R	N	17
Aspen 70—Pitkin Co									
Citizens Hospital	Gen	Indep	1	8	2	No	R	N	18
Boulder 11 23—Boulder Co									
Boulder Colorado Sanatorium and Hospital*	Gen	Church	101	60	6	Yes	M	D	1896
Community Hospital	Gen	Indep	60	1	8	No	R	N	1913
Mesa Vista Sanatorium	TB	Part	30	13	0	No	L	N	1913
Canon City 5 38—Fremont Co									
Graves Private Hospital	Gen	Part	30	7	4	No	M	D	1900
Holmes Hospital	Gen	Indiv	2	11	6	No	M	D	1900
Colorado Springs 33 37—El Paso Co									
Beth El Colorado Hosp	Gen	Church	104	70	1	No	L	N	1914
Colorado Springs Psycho-pathic Hospital	N C M	Part	1	0	0	Yes	M	D	1900
Cragmor Sanatorium	TB	Indep	1	0	116	No	M	A	1900
Glockner Sanat C Hosp *	Gen	Church	2	163	13	Yes	R	N	1913
National M E Sanat for Tuberculosis	TB	Church	70	0	0	No	L	N	1913
Observation Hospital (Included in Beth El General Hospital)	Gen	Church	1	0	1	No	R	N	1913
St. Francis Hospital*	Gen	Church	1	0	1	No	R	N	1913
Sunnyrest Sanatorium	TB	Indep	1	0	0	No	M	A	1913
Union Printers Home and Tuberculosis Sanat +	Gen	TB Indep	1	0	14	No	M	A	1913

COLORADO—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Business	Outpatient Dept	Supt. M.D.	Res. Layman	Year Fd
Cortez 921—Montezuma Co Johnson Hospital	Gen	Indiv	12	9	1	No	R	N	1917
Cripple Creek 1 427—Teller Co Cripple Creek Hospital	Gen	Indep	40	25	5	No	M	D	1890
Del Norte 1 410—Rio Grande Co St Joseph's Hospital	Gen	Church	21	8	3	No	Lay	N	1908
Delta 2 938—Delta Co Western Slope Mem Hosp	Gen	Indep	13	7	3	No	R	N	1920
Denver 287 861—Denver Co Agnes Memorial Sanat	TB	Indep	1-8	121		No	M	D	1914
Bethesda Sanatorium	TB	Church	68	52		No	M	D	1914
Beth Israel Hospital	Gen	Church	8	45	15	No	R	N	1915
Children's Hospital	Chil	Indep	162	115	25	No	R	N	1908
Colorado Gen Hospital	Gen	State	185	134	18	Yes	M	D	1908
Colorado Psychopathic Hospital	N&M	State	50	60		Yes	M	D	1924
Denver General Hospital	Gen	Cy & Co	485	311	30	No	R	N	1867
Ex-Patient Tuberc Home	TB	Indep	81	61		No	M	D	1905
1112 Hugh Sanitarium	N&M	Indiv	20	7		No	M	D	1910
Fitzsimons General Hosp	Gen	TB Army	1 832	1 200	6	No	M	D	1918
W. Donaldson Woman's Hospital	Mater	Indep	21	17	15	No	R	N	1921
Mersey Hospital	Gen	Church	167	124	25	No	R	N	1903
Mt Almy Sanitarium	N&M	Indep	40	30		No	M	D	1906
National Jewish Hosp for Consumptives	TB	Indep	300	272		Yes	M	D	1839
Physicians and Surgeons Hospital	Gen	Indiv	55	26	25	No	M	D	1891
Porter Sanit & Hospital	Gen	Church	50	21	15	No	M	D	1910
Presbyterian Hospital	Gen	Church	110	108	25	No	Lay	N	1906
St Anthony's Hospital	Gen	Church	155	99	15	No	Lay	N	1822
St Joseph's Hospital	Gen	Church	225	112	25	No	Lay	N	1911
St Luke's Hospital	Gen	Church	22	141	30	No	Lay	N	1881
Sands House	TB	Indep	30	31		No	Lay	N	1914
Steele Memorial Hospital	Iso	Cy & Co	80	16		No	R	N	1890
Durango 5 400—La Plata Co Mersey Hospital	Gen	Church	36	17	0	No	R	N	1884
Englewood 7 950—Arapahoe Co Swedish National Sanat for Tuberculosis	TB	Indep	70	63		No	Lay	N	1909
Ft Logan 1 52—Arapahoe Co Station Hospital	Gen	Army	48	15		No	M	D	1891
Ft Lyon 26—Bent Co L S Veterans Hosp No 50	Gen	VetBur	638	375		No	M	D	1907
Ft Morgan 4 423—Morgan Co Ft Morgan Hospital	Gen	Indiv	21	17	6	No	R	N	1901
Chenwood Springs 1 51—Garfield Co Glenwood Springs Sanit	Gen	Indep	25	15	7	No	R	N	1900
Grand Junction 10 247—Mesa Co St Mary's Hospital	Gen	Church	65	30	12	No	R	N	1895
State Home and Training School for Mental Defectives	MenDef	State	250	250		No	M	D	1900
Greeley 12 703—Weld Co Greeley Hospital	Gen	County	60	73	12	No	R	N	1901
Weld County Hospital	Gen	County	74	43	4	No	R	N	1901
Hayden 534—Routt Co Solandt Memorial Hosp	Gen	Indep	15	13	3	No	Lay	N	1911
La Junta 7 193—Otero Co A T & E Railroad Ho p	Indus	Indus	77	24		Yes	M	D	1881
Menonite Hosp & Sanit	Gen	Church	70	45	10	No	Lay	N	1898
Lamar 4 22—Prowers Co Charles Maxwell Hospital	Gen	Indiv		38	8	No	Lay	N	1925
Leadville 3 771—Lake Co St Vincent's Hospital	Gen	Church	20	0		No	Lay	N	1890
Longmont 6 079—Boulder Co Longmont Hospital	Gen	Indep	73	18	7	Yes	R	N	1895
Monte Vista 2 610—Rio Grande Co Monte Vista Hospital	Gen	Part	12	5	5	No	R	N	1910
Montrose 5 00—Montrose Co Montrose Hospital	Gen	Indiv	0	8	5	No	R	N	1911
St Luke's Hospital	Gen	Indiv	1	8	2	No	Lay	N	1911
Ouray 07—Ouray Co Bates Hospital	Gen	Indiv	2		3	No	M	D	1911
Pueblo 0 094—Pueblo Co Colorado State Hospital	N&M	State	2 600	1 410		No	M	D	1911
Corwin Hospital	Indus	Indus	25	110	14	Yes	M	D	1905
Jacksonville Hospital	Gen	Indep	80			No	M	D	1911
St Mary Hospital	Gen	Church	140		12	No	Lay	N	1911
Woolcroft Hospital	N&M	Indep	170	8		No	M	D	1911
Ridgely—Jefferson Co State Home and Training School for Mental Defectives	MenDef	State	250	250		No	M	D	1900
Rocky Ford 2 479—Otero Co Philean Hospital	Gen	Part	10	8	2	No	M	D	1910
Salida 07—Chaffee Co R G W Railroad Ho p	Indus	Indus	51	4	4	No	R	N	1911
Red Cross Hospital	Gen	Ind p			2	No	Lay	N	1911
Silverton 1 301—San Juan Co Silverton Miner Union Hospital	Indus	Ind p	22	8		No	Lay	N	1911
Spivak 20—Jefferson Co Sanat of the Jewish Consumptive Relief Soc of TH	Ind p			1	1	Yes	M	D	1911
Steamboat Springs 118—Monte Vista Co Steamboat Sprng Ho p	Ind p	Ind p	10	4	2		M	D	1911
Sterling 102—Torrance Co St Benedict's Hospital	Gen	Church		16	6	Yes	Lay	N	1911
Tonawase 08—Montezuma Co Ste Mt Indian Hospital	Gen	Ind p	21	11	3				1911
Trinidad 117—Triton Co Mt San Rafael Ho p	Gen	Ind p	60	6	1	No	Lay	N	1911
Walsburg 117—Huerfano Co Walsburg Ho p	Ind p	Ind p	2	11	4	Yes	M	D	1911

Key to symbols and abbreviations is on page 1023

COLORADO—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt. M.D.	R.N. Layman	Year Est
Wheat Ridge 851—Jefferson Co Evangelical Lutheran Sanit	FB	Church	80	77	No	I	ay	1900	
Windsor 1842—Weld Co Windsor Hospital	Gen	Indiv	12	5	2	No	M	D	1908
Woodmen—El Paso Co Modern Woodmen of America Sanatorium	FB	Frnt	200	200	No	Lay	1900		
Yuma 1360—Yuma Co Lutheran Deaconess Hosp	Gen	Church	12	4	4	No	I	ay	1925
Related Institutions									
Boulder 1170—Boulder Co Boulder County Hospital	Inst	County	30	20	No	Lay	1919		
Breckenridge 436—Summit Co Summit County Hospital	Inst	County	11	10	No	I	ay	1900	
Brush 2312—Morgan Co Brush 12zer Hospital	Inst	Church	24	18	No	Lay	1916		
Canon City 5938—Fremont Co Colorado State Penit Hosp	Inst	State	22	18	Yes	I	ay	1878	
Collbran 341—Mesa Co Plateau Valley Congregation Hospital	Gen	Church	8	4	2	No	R	N	1924
Colorado Springs 3327—El Paso Co Colorado School for Deaf and Blind	Inst	State	31	6	No	I	ay	1874	
Orestone Heights Sanit Myron Stratton Home	Gen	Indiv	20	8	5	Yes	M	D	1922
Denver 287561—Denver Co Church Home for Convalescent Denver Orphans Home	Inst	Church	24	18	No	I	ay	1811	
Junior League Preventorium for Undernourished Children	Child	Indep	22	20	No	I	ay	1922	
McDonald's Mater Hosp	Mater	Indiv	10	3	7	No	Lay	1922	
National Home for Jewish Children	Inst	Indep	30	2	No	I	ay	1908	
Oakes Home	TB	Church	100	60	No	I	ay	1811	
St Clara Orphanage	Inst	Church	30	3	No	I	ay	1891	
Englewood 7980—Arapahoe Co Molkeny Sanitarium	N&M	Indiv	16	14	No	Lay	1900		
Temple Sanatorium	TB	Indep	20	20	No	Lay	1921		
Estes Park 417—Larimer Co Dr Henry Reid Clinic and Hospital	Gen	Indiv	10	7	No	M	D	1900	
Fairplay 221—Park Co Fairplay Hospital	Gen	Indiv	20	12	2	Yes	M	D	1890
Fruita 1063—Mesa Co Fruita Community Hosp	Gen	Indep	9	4	No	R	N		
Golden 2426—Jefferson Co State Industrial School for Boys	Inst	State	23	4	Yes	Lay	1881		
Haverton 1027—Phillips Co Haverton Hospital	Gen	Indiv	12	4	2	No	I	ay	1919
Holyoke 1296—Phillips Co Holyoke Hospital	Gen	Indiv	8	5	2	Yes	M	D	1918
Homelake—Rio Grande Co Colorado State Soldiers' and Sailors Home	Inst	State	39	18	No	Lay	1891		
Hugo 712—Lincoln Co Parker Hospital	Gen	Indiv	15	9	No	R	N	1925	
La Veta 782—Huerfano Co La Veta Hospital	Gen	Indiv	8	6	1	No	M	D	1910
Longmont 6023—Boulder Co St Vrain Hospital	Gen	Indiv	8	4	4	No	Lay	1908	
Loveland 5606—Larimer Co Loveland Hosp and Clinic	Gen	Part	10	5	4	No	M	D	1930
Nampanqua Hospital	Gen	Indep	12	6	4	No	R	N	1929
Mt Morrison 177—Jefferson Co State Industrial School for Girls	Inst	State	10	1	No	Lay	1890		
Oak Creek 1211—Routt Co Oak Creek Hospital	Gen	Indiv	8	4	2	No	M	D	1914
Red Cross Hospital	Gen	Indiv	12	8	2	No	R	N	1922
Pueblo 30096—Pueblo Co City Contagious Hospital	Iso	City	20	17	No	M	D	1918	
Selbert 27—It Carson Co Selbert Hospital	Gen	Indiv	5	2	2	No	Lay	1920	
Windsor 152—Weld Co Bartz Memorial Hospital	Gen	Indiv	7	3	2	No	M	D	1916
Summary for Colorado									
Hospitals and sanatoriums	Number	Beds	Patients	Basinets					
Related institutions	81	11 907	880	511					
Totals	30	734	33	53					
Refused registration	116	12 691	9 203	564					
	10	264		42					

CONNECTICUT

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt. M.D.	R.N. Layman	Year Est
Bridgeport 146716—Fairfield Co Bridgeport Hospital	Gen	Indep	298	200	62	No	Lay	1877	
Englewood Hosp tal	Iso	City	150	48	No	R	N	1918	
Hillside Home and Hosp tal	N&M	City	30	180	No	Lay	1914		
Park City Hospital	Gen	Indep	24	18	10	No	R	N	1924
St Vincent's Hospital	Gen	Church	208	160	27	No	R	N	1903
Bristol 25451—Hartford Co Bristol Hospital	Gen	Indep	84	57	16	Yes	R	N	1922

CONNECTICUT—Continued

	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt. M.D.	R.N. Layman	Year Est.
Danbury 22261—Fairfield Co Danbury Hospital*	Gen	Indep	110	74	18	No	R	N	1845
Derby 10785—New Haven Co Griffin Hospital	Gen	Indep	78	65	20	No	R	N	1901
Greens Farm 270—Fairfield Co Dr McFarland & Hall Brooke Sanitarium	N&M	Indiv	100	90		Yes	M.D.		1875
Greenwich 581—Fairfield Co Blythenood	N&M	Indep	60	55		No	M.D.		1900
Bowman's Sanatorium	N&M	Indiv	15	11		No	M.D.		1880
Crest View Sanatorium	N&M	Indiv	20	20		No	M.D.		1899
Greenwich Hospital*	Gen	Indep	105	61	20	Yes	Lay		1903
Guilford 1880—New Haven Co Guilford Sanatorium	Gen	Indep	12	5	3	No	R	N	1901
Hartford 164072—Hartford Co Celurest+	TB	State	192	187		No	M.D.		1910
Charter Oak Private Hosp	Gen	Indep	14	10		No	R	N	1906
Hartford Hospital*	Gen	Indep	721	514	64	No	M.D.		1841
Hartford Isolation Hosp	Iso	City	60	27		No	M.D.		1914
Hartford Retreat	N&M	Indep	182	160		No	M.D.		1822
Mt Sinai Hospital*	Gen	Indep	65	41	10	No	R	N	1922
Municipal Hospital*	Gen	City	120	112	10	Yes	Lay		1900
Alles Street Private Hosp	Gen	Indiv	18	8	36	No	R	N	1919
St Francis Hospital*	Gen	Church	450	371	70	Yes	Lay		1877
Wildwood Sanatorium	TB	Indep	60	43		No	M.D.		1909
Wanskett Depot 206—Tolland Co Wanskett State Training School and Hospital	N&M	State	920	860		Yes	M.D.		1917
Meriden 28451—New Haven Co Meriden Hospital*	Gen	Indep	112	62	18	No	Lay		1880
Meriden State Tuberculosis Sanatorium*	TB	State	220	190		No	M.D.		1910
Middletown 24544—Middlesex Co Connecticut State Hosp*	N&M	State	2 962	2 870		Yes	M.D.		1866
Middlesex Hospital*	Gen	Indep	120	96	20	No	R	N	1905
Milford 12670—New Haven Co Milford Hospital	Gen	Indep	20	16	6	No	Lay		1921
New Britain 68128—Hartford Co New Britain General Hosp*	Gen	Indep	210	132	36	No	M.D.		1893
New Haven 10260—New Haven Co Grace Hospital*	Gen	Indep	242	169	40	No	Lay		1889
Hospital of St Raphael*	Gen	Church	220	149	30	No	Lay		1907
New Haven Hospital*	Gen	Indep	404	264	30	Yes	Lay		1876
Newington 4572—Hartford Co Newington Home for Cripple Children	Ortho	Indep	200	161		Yes	R	N	1898
New London 29640—New London Co Home Memorial Hospital	Gen	Indep	60	19	10	No	R	N	1900
Dr Lena's Hospital	Surg	Indiv	25	23		No	M.D.		1909
Lawrence and Memorial As sociated Hospitals**	Gen	Indep	191	111	39	No	R	N	1910
New Milford 4700—Litchfield Co New Milford Hospital	Gen	Indep	25	8	8	No	R	N	1921
Niantic 1697—New London Co The Seaside	TB	State	60	59		No	M.D.		1919
Norwalk 56010—Fairfield Co Norwalk General Hospital	Gen	Indep	137	75	20	No	Lay		1893
Norwich 2701—New London Co Norwich State Hospital	N&M	State	2 400	2 330		Yes	M.D.		1903
Norwich State Tuberculosis Sanatorium	TB	State	222	216		Yes	M.D.		1910
William W Backus Hosp**	Gen	Indiv	129	66	26	No	R	N	1831
Putnam 7318—Windham Co Day Kimball Hospital	Gen	Indep	60	30	7	Yes	R	N	1899
Rockville 744—Tolland Co Rockville City Hospital	Gen	Indep	35	12	10	No	R	N	1901
Sharon 1710—Litchfield Co Sharon Hospital	Gen	Indep	40	16	12	Yes	R	N	1909
Shelton 10113—Fairfield Co Laurel Heights Sanatorium	TB	State	260	162		No	M.D.		1910
South Manchester 1007—Hartford Co Manchester Memorial Hosp	Gen	Indep	55	42	11	Yes	Lay		1900
South Norwalk 8063—Fairfield Co Dr Wadsworth's Sanit	N&M	Indiv	35	16		No	M.D.		1903
Stafford Springs 3492—Tolland Co Cyril & Julia O Johnson Memorial Hospital	Gen	Indep	40	21	14	No	Lay		1912
Stamford 46346—Fairfield Co Dr Barnes Sanitarium	N&M	Indiv	70	60		No	M.D.		1898
The Orchards	N&M	Indep	80	25		No	M.D.		1900
Stamford Hall	N&M	Indep	200	200		No	M.D.		1891
Stamford Hospital*	Gen	Indep	231	139	36	Yes	R	N	1892
Thompsonville, 852—Hartford Co Limerick—Dr Vall's Sanat	N&M	Indep	35	15		No	M.D.		1890
Torrington 26040—Litchfield Co Charlotte Hungerford Hosp	Gen	Indep	68	54	12	No	R	N	1916
Wallford 11170—New Haven Co Gaylord Farm Sanatorium	TB	Indep	140	140		No	M.D.		1901
Waterbury 99002—New Haven Co St Mary's Hospital*	Gen	Church	179	157	41	No	R	N	1908
Waterbury Hospital*	Gen	Indep	280	147	36	Yes	M.D.		1883
West Hartford 24941—Hartford Co Prospect Hospital	Gen	Indep	26	17	5	No	Lay		1901
West Haven 20808—New Haven Co West Haven Surgical and Maternity Hospital	Gen	Indiv	20	12	12	No	Lay		1904
William Wirt Winchester Hospital	TB	Indep	60	59		No	M.D.		1927
Westport 6003—Fairfield Co Westport Sanitarium	N&M	Indep	135	90		No	M.D.		1891
Williamantic 12102—Windham Co St Joseph's Hospital*	Gen	Church	60	35	8	No	Lay		1908
Winsted 7883—Litchfield Co Litchfield County Hosp*	Gen	Indep	67	39	11	No	R	N	1901

Key to symbols and abbreviations is on page 1023

CONNECTICUT—Continued

Related Institutions	Type of Service	Control	Beds	Average Patients	Bassinets	Outpatient Dept	Supt M D	R N Layman	Year Est
Bridgeport 146 716—Fairfield Co Park City Sanitarium	Gen	Indiv	5	7	No	Lay	1921		
Cheshire 3 963—New Haven Co Connecticut Reformatory	Inst l	State	27	7	No	Lay	1913		
Cromwell 2 814—Middlesex Co Cromwell Hall	Conv	Indiv	33	23	No	M D	1877		
East 2 77—Middlesex Co Puttapaug Lodge	Conv	Indiv	18	10	No	Lay	1929		
Greenwich 1 981—Fairfield Co Municipal Hospital	Gen	City	35	6	No	R N	1920		
Meriden 38 481—New Haven Co Connecticut School for Boys	Inst l	State	9	3	No	Lay	1851		
Middletown 24 304—Middlesex Co Long Lane Farm	Inst l	State	19	7	No	Lay	1861		
New Haven 16 655—New Haven Co Children's Community Center of the New Haven Orphan Asylum	Inst l	Indep	34	10	No	Lay	1833		
Jewish Home for the Aged	Inst l	Indep	42	10	No	M D	1915		
Springdale Almshouse	Inst l	City	100	70	No	Lay	1885		
Whitney Avenue Hospital	Gen	Indiv	20	5	8	No	R N	1915	
Yale Infirmary	Inst l	Indep	30	9	No	R N	1892		
New London 29 640—New London Co Connecticut College Infirmary	Inst l	Indep	11	2	No	M D	1918		
Niantic 1 697—New London Co Connecticut State Farm for Women	Inst l	State	50	45	20	No	Lay	1918	
Noroton Heights 700—Fairfield Co Soldiers Hospital	Inst l	State	103	90	No	M D	1864		
Springdale 663—Fairfield Co Nestledown Home	Conv	Indiv	12	4	No	Lay	1924		
Stamford 46 346—Fairfield Co Highfields Convalescent Home for Crippled Children	Conv	Indep	20	15	No	R N	1910		
Stratford 19 212—Fairfield Co Sunnyside Sanitarium	Conv	Indiv	20	15	No	Lay	1910		
West Hartford 24 941—Hartford Co American School for the Deaf	Inst l	Indep	18	4	Yes	Lay	1817		
St Agnes Home	Inst l	Church	12	6	10	No	Lay	1914	
West Haven 25 805—New Haven Co Convalescent Home	Conv	Indiv	6	6	No	R N	1929		
Wethersfield 7 512—Hartford Co Connecticut State Prison Hospital	Inst l	State	34	20	No	Lay	1848		
Woodmont 531—New Haven Co Woodmont Hall	Conv	Indep	16	8	No	R N	1903		
Summary for Connecticut									
Hospitals and sanatoriums	Number	Beds	Patients	Bassinets					
Related institutions	67	14 605	11 917	819					
Totals	22	640	313	1					
Refused registration	89	15 245	19 330	894					

DELAWARE

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Bassinets	Outpatient Dept	Supt M D	R N Layman	Year Est
Dover 4 800—Kent Co Kent General Hospital	Gen	Indep	39	14	8	No	R N	1912	
Farmhurst 332—New Castle Co Delaware State Hospital	N & M	State	725	667	Yes	M D	1899		
Pt Dupont (Delaware City Prison)—New Castle Co Station Hospital	Gen	Army	25	9	No	M D	1895		
Lees 1 922—Sussex Co Beebe Hospital	Gen	Indep	41	22	6	Yes	M D	1921	
Mar hallon 650—New Castle Co Brandywine Sanatorium	T B	State	71	53	No	M D	1899		
Edgewood Sanit (col)	T B	State	21	19	Yes	R N	1909		
Wilford 3 719—Sussex Co Wilford Emergency Hospital	Gen	Indep	31	17	6	No	R N	1911	
Marshall Hospital	Gen	Part	22	12	8	No	R N	1912	
Stockley 135—Sussex Co Delaware Colony for Mental Defective	N & M	State	210	110	No	Lay	1921		
Wilmington 106 507—New Castle Co Delaware Hospital	Gen	Indep	115	125	2	Yes	R N	1899	
Homeopathic Hospital	Gen	Indep	110	70	Yes	Lay	1888		
St Francis Hospital	Gen	Church	71	65	14	Yes	R N	1914	
Wilmington General Hospital	Gen	Indep	23	63	14	Yes	R N	1919	
Related Institutions									
Mar hallon 650—New Castle Co Sunnybrook Cottage	Conv	Indep	20	20	No	Lay	1910		
Wilmington 106 509—New Castle Co Dr J J Jones Private Hospital	Gen	Indiv	50	12	No	Lay	1884		
Summary for Delaware									
Hospitals and sanatoriums	Number	Beds	Patients	Bassinets					
Related institutions	13	1 612	1 220	109					
Totals	1	171	1 220	109					
Refused registration	0								

DISTRICT OF COLUMBIA

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Bassinets	Outpatient Dept	Supt M D	R N Layman	Year Est
Washington 486 869 Carson's Private Hosp (col)	Gen	Indiv	15	13	4	No	M D	1919	
Central Dispensary and Emergency Hospital	Gen	Indep	260	152	Yes	Lay	1871		
Cherry Chase Sanatorium	N & M	Indep	20	13	No	M D	1914		
Children's Hospital	Chil	Indep	171	111	12	Yes	R N	1810	
Columbia Hosp for Women and Young In Asylum	Mater	Indep	125	70	78	Yes	M D	1866	
Curtis Private Surgical Sanitarium (col)	Gen	Part	16	6	4	No	M D	1915	
Eastern Dispensary and Casualty Hospital	Gen	Indep	125	25	25	Yes	M D	1888	
Epi copal Eye Ear and Throat Hospital	EENT	Church	100	60	Yes	Lay	1897		
Freedmen's Hosp (col)	Gen	Fed	265	220	24	Yes	M D	1861	
Callinger Municipal Hospital	Gen	City	560	405	50	Yes	M D	1899	
Carfield Memorial Hosp	Gen	Indep	271	156	40	Yes	M D	1882	
Georgetown Univ Hosp	Gen	Indep	250	150	32	Yes	R N	1898	
George Washington University Hospital	Gen	Indep	91	66	16	Yes	Lay	1895	
Harriet Lane Sanitarium	N & M	Indiv	22	14	2	No	M D		
National Homeopathic Hospital	Gen	Indep	40	40	20	Yes	R N	1881	
Providence Hospital	Gen	Church	250	190	70	Yes	R N	1870	
St Elizabeth's Hospital	N & M	Fed	457	430	Yes	M D	1850		
St Elizabeth's Hosp (Med and Surg Dept)	Gen	Fed	210	210	2	Yes	M D	1852	
Sibley Memorial Hospital	Gen	Church	23	17	75	Yes	Lay	1899	
Tuberculosis Hosp of D C TB State	State	State	200	100	No	M D	1905		
U S Naval Hospital	Gen	Navy	475	31	No	M D	1905		
U S Veterans Hospital	Gen	VetBur	100	100	No	M D	1919		
Walter Reed Gen Hosp	Gen	Army	1 100	846	20	No	M D	1900	
Washington Sanit & Hosp	Gen	Indep	165	130	10	Yes	M D	1901	
Related Institutions									
Washington 486 869 Children's Summer Health Camp	T B	Indep	60	60	No	M D			
Dowling's Private Eye Hospital (col)	Eye	Indiv	6	3	No	M D	1898		
Florence Crittenton Home	Mater	Indep	12	10	11	No	Lay	1891	
Home for Aged & Infirm	Inst l	State	52	42	No	Lay	1901		
Kendall Home Sanitarium	Conv	Indiv	22	9	No	R N	1918		
National Training School for Boys Hospital	Inst l	Fed	20	5	No	Lay	1852		
St Ann's Infant Asylum	Inst l	Church	14	10	6	No	R N	1860	
St John's Orphanage	Inst l	Church	14	7	No	Lay	1860		
Smilg's Hospital	Gen	City	41	3	2	No	M D	1886	
U S Soldier Home Hospital	Inst l	Army	500	3	No	M D	1876		
Washington Eye Ear Nose and Throat Hospital	EENT	Indep	10	7	Yes	Lay	1911		
Washington Home for Incurables	Incur	Indep	117	110	No	R N	1885		
Washington Sanitarium	Gen	Indep	117	110	No	R N	1885		
Mission Hospital	FNT	Indiv	14	1	Yes	M D	1914		
Dr Wm Gerry Morgan Hosp	Conv	Indiv	8	6	No	Lay	1911		
Summary for District of Columbia									
Hospitals and sanatoriums	Number	Beds	Patients	Bassinets					
Related institutions	24	5 817	5 100	461					
Totals	14	917	1 491	1					
Refused registration	38	10 734	8 091	43					

FLORIDA

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Bassinets	Outpatient Dept	Supt M D	R N Layman	Year Est
Arcadia 40 —De Soto Co Arcadia General Hospital	Gen	Indep	70	15	3	No	R N	1890	
Bartow 3 016—Polk Co Bartow General Hospital	Gen	City	15	8	No	M D	1910		
Polk County Hospital	Gen	County	20	4	No	M D	1911		
Century 1 424—Franklin Co Tubercular Hospital	Gen	Indiv	1	4	No	R N	1911		
Chattahoochee 40—Candler Co Florida State Hospital	N & M	State	2 000	14	No	M D	1881		
Clearwater 3 000—Hillsborough Co Morton Plant Industries Hospital	Gen	Indep	1	10	No	P N	1915		
Dade City 1 511—Pasco Co Dr T J Jackson Hospital	Indiv	Indiv	12	4	No	M D	1914		
Daytona Beach 3 000—Volusia Co Daytona Beach Sanitarium	Gen	Indiv	30	1	No	M D	1911		
Hall County District Hospital	Gen	County	1	1	1	Yes	Lay	1911	
McCall Hospital	Gen	County	1	1	2	No	M D	1911	
De Land 3 000—Volusia Co De Land Memorial Hospital	Gen	Indiv	1	11	No	R N	1911		
De Bary 3 000—Volusia Co Station Hospital	Gen	Army	1	1	Yes	M D	1911		
Florida Hospital—Orange Co Central Hospital	Gen	Indiv	1	14	4	No	Lay	1911	
Fort Myers 3 000—Lee Co James Walker Hospital	Gen	Indiv	1	1	Yes	Lay	1911		
Lee Memorial Hospital	Gen	Indiv	1	1	4	Yes	Lay	1911	

Key to symbols and abbreviations is on page 1023

FLORIDA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt M D	R N	Year Est
Gainesville 10 405—Alachua Co	Gen	County	46	28	6	No	R N		1925
Alachua County Hospital									
Florida Farm Colony for Epileptic & Feeble-minded	N & M	State	500	447	No	M D			1919
Homestead 2 319—Dade Co	Gen	Part	10	4	2	No	R N		1921
Post Graduate Hospital									
Jacksonville 129 549—Duval Co	Gen	Church	60	20	10	Yes	R N		1902
Brewster Hospital (col)	Gen	County	170	112	15	Yes	R N		1886
Duval County Hospital									
Riverside Hospital	Gen	Indep	40	24	5	Yes	R N		1910
St Luke's Hospital	Gen	Indep	153	8	22	No	R N		1873
St Vincent's Hospital	Gen	Church	200	70	40	No	R N		1916
Key West 12 831—Monroe Co	Gen	USPHS	7	70	1	Yes	M D		1840
U S Marine Hospital									
Lake City 4 416—Columbia Co	Gen	Indep	2	0	4	No	M D		1917
Lake Shore Hospital	Gen	VetBur	300	0	1	Yes	M D		1920
U S Vet Hosp No 63									
Lakeland 18 54—Polk Co	Gen	City	2	5	No	M D			1926
Lakeland Emergency Hospital (col)	Gen	City	77	30	16	No	M D		1916
Morrell Memorial Hospital	Gen								
Manatee 3 219—Manatee Co	Gen	Indiv	20	5	4	No	M D		1906
Riverside Hospital									
Marianna 3 372—Jackson Co	Gen	Indiv	14	6	2	No	R N		1922
Baltzell Hospital									
Melbourne 2 677—Brevard Co	Gen	Indiv	2	7	7	Yes	M D		1925
Melbourne Hospital									
Miami 110 637—Dade Co	Gen	Indiv	28	13	7	No	R N		1927
Biltmore Hospital									
James M Jackson Memorial Hospital	Gen	City	290	188	20	Yes	M D		1911
Miami Retreat	N & M	Indiv	6	11	6	No	R N		1927
Reese Boulevard Hospital	Gen	Indiv	20	10	5	No	R N		1929
Victoria Hospital	Gen	Indiv	60	25	7	No	R N		1921
Miami Beach 6 494—Dade Co	Gen	Church	86	22	6	Yes	R N		1900
St Francis Hospital									
Ocala 7 251—Marion Co	Gen	City & Co	70	7	10	No	R N		1907
Monroe Memorial Hosp	Gen								
Orlando 27 70—Orange Co	Gen	Church	10	6	14	Yes	M D		1908
Florida Sanit & Hosp	Gen	Indep	100	50	20	No	R N		1916
Orange General Hospital									
Palatka 6 600—Putnam Co	Gen	Part	12	7	4	No	R N		1926
Glendale Terrace Hospital	Gen	Indiv	27	7	6	No	R N		1920
Mary Lawson Sanat (col)	Gen	Indiv	20	10	2	Yes	Lay		1924
Parkview Hospital									
Panama City 5 402—Bay Co	Gen	Indiv	15	10	2	Yes	M D		1927
Panama City Hospital									
Pensacola 31 579—Escambia Co	Gen	Church	100	44	15	No	R N		1911
Pensacola Hospital	Gen	Navy	107	170	No	M D			1846
U S Naval Hospital									
Quincy 3 788—Cadesden Co	Gen	Indep	22	12	4	No	R N		1919
Godsden County Hospital									
St Augustine 12 111—St John Co	Gen	Indus	70	47	6	Yes	M D		1890
East Coast Hospital	Gen	Indep	8	30	10	Yes	R N		1890
Flagler Hospital									
St Petersburg 40 425—Pinellas Co	Gen	City	20	7	1	No	R N		1916
Mercy Hospital (col)	Gen	City	50	40	14	No	R N		1918
Mound Park Hospital									
Sanford 10 100—Seminole Co	Gen	City	20	12	6	No	R N		1909
Iernald Loughton Memorial Hospital									
Sarasota 8 308—Sarasota Co	Gen	City	60	12	5	No	R N		1924
Sarasota Hospital									
Sebring 2 912—Highlands Co	Gen	Indiv	12	3	2	No	Lay		1924
Sebring General Hospital	Gen	Indiv	11	4	2	No	M D		1926
Dr Weems Hospital									
Stuart 1 924—Martin Co	Gen	Indep	1	3	2	No	Lay		1906
St Lucie Sanitarium									
Tallahassee 10 700—Leon Co	Gen	Indiv	20	17	6	No	R N		1924
Johnston's Hospital									
Tampa 101 161—Hillsborough Co	Gen	Frnt	68	48	6	Yes	R N		1928
Centro Asturiano Hospital	Gen	Indep	30	7	1	Yes	R N		1926
Children's Hospital	Chil	Indiv	30	30	12	No	R N		1921
Dr H M Cook's Sanat	Gen								
Hillsboro County Tubercu									
iosis Sanitarium	TR	County	50	44	No	Lay			1913
Mills Hospital	N & M	Indiv	12	8	No	M D			1923
Tampa Municipal Hosp	Gen	City	173	90	24	Yes	M D		1927
Tampa Negro Hospital	Gen	City	33	21	1	No	M D		1930
West Palm Beach 26 610—Palm Beach Co	Gen	Indep	12	40	14	No	M D		1916
Good Samaritan Hospital	Gen	Indep	10	17	5	No	M D		1922
Pine Ridge Hospital (col)									

Related Institutions

Brooksville 1 400—Hernando Co	Gen	Indep	12	3	2	Yes	R N		1926
Hernando General Hosp									
Gainesville 10 465—Alachua Co	Gen	Indiv	12	4	1	No	Lay		1910
Jennie Rowe Hosp (col)									
Jacksonville 129 549—Duval Co	Gen	Indiv	8	5	6	No	M D		1900
Rollins Hosp for Women	Mater								
Kendall 26—Dade Co	Inst 1	County	50	38	1	Yes	R N		1927
Dade County Hospital									
Miami 110 637—Dade Co	Coqv	Indep	50	50	1	Yes	M D		1928
Miami Solarium									
Ocala 7 281—Marion Co	Inst 1	State	20	4	No	R N			1917
Florida Industrial School for Girls									
Orange Park 671—Clay Co	Inst 1	Frnt	40	14	No	M D			1922
Moorehaven Hospital									
Panama City 5 402—Bay Co	Gen	Part	17	4	2	No	M D		1930
Dr's Whitfield and Fraser Hospital									
Raiford 460—Union Co	Inst 1	State	40	18	No	Lay			1914
Florida State Farm Hosp									

FLORIDA—Continued

Related Institutions	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt M D	R N	Year Est
St Petersburg 40 42—Pinellas Co	Conv	Indep	18	10	No	Lay			1907
American Legion Hospital for Crippled Children									
Sarasota 8 308—Sarasota Co	Gen	Indiv	7	6	3	No	R N		1922
Joseph Hulton Hospital									
Tallahassee 10 700—Leon Co	College Infirmary	Florida	52	30	No	M D			1900
State College for Women	Inst 1	State	20	12	1	Yes	M D		1911
Florida Agricultural and Mechanical College Hosp	Inst 1	State	40	8	Yes	Lay			1904
Tampa 101 161—Hillsborough Co	Gen	Frnt	0	0	No	Lay			1900
Centro Espanol Sanat	Gen	Indiv	12	12	No	M D			1909
Children's Home	Inst 1								
Tampa Sanitarium	Gen	Indiv	15	4	No	R N			1900
Venezuela Small Hospital (col)	Gen	Indiv	11	4	4	No	R N		1920
Winter Haven 7 170—Polk Co	Gen	Indep							
Winter Haven General Hospital									

Summary for Florida

Hospitals and sanatoriums	Number	Beds	Patients	Ba	Inets
Related Institutions	18	460	220		91
Totals	87	8 460	6 230	460	22
Refused registration	16	306			

GEORGIA

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt M D	R N	Year Est
Adel 1 70—Cook Co	Gen	Part	10	5	No	M D			1910
Adel Hospital									
Albany 14 07—Dougherty Co	Gen	Indep	40	14	No	R N			1911
Phoebe Putney Memorial Hospital									
Alto 210—Habersham Co	TB	State	325	210	Yes	M D			1910
State Tuberculosis Sanat									
Americus 5 60—Sumter Co	Gen	City & Co	30	30	4	No	R N		1911
Americus and Sumter County Hospital	Gen	Indiv	30	30	4	No	Lay		1923
Americus Colored Hospital									
Athens 15 192—Clarke Co	Gen	County	60	30	12	Yes	R N		1921
Athens General Hospital									
Barhaven 4 08—Sanit	TB	Indep	30	23	No	R N			1906
St Mary's Hospital	Gen	Indep	55	13	4	Yes	R N		1906
Atlanta 2 070—Fulton Co	Gen	Indep	50	19	6	Yes	R N		1901
Atlanta Hospital									
Battle Hill Sanatorium	TB	City & Co	225	200	No	M D			1910
Dr Brainer's Sanitarium	N & M	Part	40	30	No	M D			1910
Davis Lischer Sanatorium	Gen	Indep	132	70	14	No	R N		1908
Georgia Baptist Hosp	Gen	Church	120	90	20	No	Lay		1903
Georgia Sanitarium	Gen	Indiv	10	5	2	No	M D		1923
Grady Memorial Hosp	Gen	City	500	419	50	Yes	Lay		1921
Grady Memorial Hospital									
Henry Division (col) (See Steiner Cancer Ward)	Gen	City	200	215	30	Yes	Lay		
Henrietta 1 030—Fulton Hosp for Children	Chil	Indep	50	17	4	No	R N		1928
Dr Nobles Private Infirmary	Gen	Indiv	2	15	3	No	R N		1906
Piedmont Hospital	Gen	Indep	120	76	15	No	Lay		1900
St Joseph Infirmary	Gen	Church	120	60	12	No	Lay		1901
St Mary's Hospital	Mater	Indiv	32	15	4	No	Lay		1900
Station Hospital	Gen	Army	73	40	4	Yes	M D		1888
Steiner Cancer Ward (Unit of Grady Mem Hospital)	Cancer	City	30	30	Yes	Lay			1904
U S Veterans Hospital	Gen	VetBur	200	175	No	M D			1900
William A Harris Memorial Hospital (col)	Gen	Indiv	14	10	2	No	M D		1925
Augusta 60 342—Richmond Co	U S Veterans Hosp	N & M	617	568	1	Yes	M D		1900
Augusta 60 342—Richmond Co	U S Veterans Hosp	N & M	617	568	1	Yes	M D		1900
University Hospital	Gen	City	232	170	19	Yes	M D		1914
Wilkesboro Hospital for Women and Children	Gen	Indep	50	20	4	No	R N		1910
Bainbridge 6 141—DeKalb Co	Surg	Indiv	32	17	2	No	M D		1910
Bainbridge Hospital	Gen	Part	30	18	4	Yes	R N		1917
Riverside Hospital									
Brunswick 14 022—Glynn Co	Gen	City	75	17	6	No	M D		1904
Brunswick City Hospital									
Calro 3 169—Grady Co	Gen	Indiv	20	8	No	M D			1914
Walker Hospital									
Canton 2 602—Cherokee Co	Gen	Indep	20	13	2	No	M D		1923
Coker's Hospital									
Cedartown 8 124—Folk Co	Gen	Indiv	12	5	2	Yes	M D		1926
Cedartown Hospital	Gen	Indiv	10	4	No	R N			1904
Hall Chaudron Hospital	Gen	Indiv	10	4	2	No	M D		1922
Whitley Hospital									
Columbus 43 131—Muscogee Co	Gen	City & Co	150	70	12	Yes	Lay		1910
Columbus City Hospital									
Cuthbert 3 035—Randolph Co	Gen	Part	20	12	3	No	M D		1900
Hatfield Hospital									
Dalton 8 160—Whitfield Co	Gen	Indep	40	12	6	No	R N		1920
Hamilton Memorial Hosp	Gen								
Deatur 13 276—De Kalb Co	Ortho	Frnt	64	30	Yes	P N			1910
Scottish Rite Hospital for Crippled Children									
Donelsonville 1 153—Seminole Co	Gen	Indep	20	12	3	No	M D		1910

ILLINOIS—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Sum. M. D. R. N. Layman	Year Est
Harrisburg II 625—Saline Co								
Harrisburg Hospital	Gen	Indep	30	10	2	Yes	M D	1923
Lighthouse Hospital	Gen	Indiv	33	20	2	No	M D	1909
Harvard 2988—McHenry Co								
Harvard Community Hosp	Gen	Part	21	9	4	No	R N	1895
Harvey 1374—Cook Co								
Inqualls Memorial Hosp	Gen	Indep	95	40	25	No	R N	1923
Herrin 9708—Williamson Co								
Herrin Hospital	Gen	Part	40	17	4	No	R N	1912
Highland 3339—Madison Co								
St Joseph's Hospital	Gen	Church	65	43	5	No	Lay	1877
Highland Park 12703—Lake Co								
Highland Park Hospital	Gen	Indep	53	23	17	No	R N	1918
Hillsboro 4433—Montgomery Co								
Hillsboro Hospital	Gen	Indep	28	15	5	Yes	R N	1916
Hines — Cook Co								
Edward Hines Jr Hospital	Gen	VetBur	1635	900		No	M D	1921
Hinsdale 6927—Du Page Co								
Hinsdale Sanitarium and Hospital	Gen	Indep	133	67	15	No	Lay	1904
Jacksonville 17747—Vorgan Co								
Jacksonville State Hosp	N & M	State	3225	3150		No	M D	1847
Jacobury Sanatorium	N & M	Indep	125	96		Yes	M D	1901
Oakland Sanatorium	FB	County	35	33		Yes	M D	1922
Our Savior's Hospital	Gen	Church	75	55	15	No	I N	1890
Passavant Memorial Ho p	Gen	Church	72	39	14	Yes	R N	1870
Jerseyville 4309—Jersey Co								
Jerseyville Hospital	Gen	Indiv	15	New	5	No	M D	1930
Joliet 32993—Will Co								
St Joseph's Hospital	Gen	Church	190	178	40	No	Lay	1882
Silver Cross Hospital	Gen	Indep	133	54	15	Yes	I N	1901
Will County Tuber Sanit	TB	County	60	49		No	M D	1912
Kankakee 2000—Kankakee Co								
Kankakee State Hospital	N & M	State	4021	3532		No	M D	1875
St Mary's Hospital	N & M	Church	125	62	18	No	Lay	1851
Kenilworth 2701—Cook Co								
Kenilworth Sanitarium	N & M	Indiv	32	25		No	M D	1900
Kewanee 17093—Henry Co								
Kewanee Public Hospital	Gen	Indep	72	37	8	No	R N	1919
St Francis Hospital	Gen	Church	55	25	10	Yes	R N	1865
La Harpe 1175—Hancock Co								
Davies Memorial Hospital	Gen	Indep	14	4	4	No	Lay	1903
Lake Forest 604—Lake Co								
Lake Forest Hospital	Gen	Indep	43	21	8	No	R N	1895
Lake Forest Hospital (Contagious Department of Allie Home Hosp)								
La Salle 13149—La Salle Co								
St Mary's Hospital	Gen	Church	50	60	10	No	I N	1887
Libertyville 3191—Lake Co								
Condell Memorial Hospital	Gen	Indep	24	10	6	No	I N	1925
Lincoln 12535—Logan Co								
Evangelical Deacons' Hos pital	Gen	Church	52	39	8	No	R N	1905
Lincoln State School and Colony	Men	DefState	2500	2700	20	No	M D	1885
St Clara's Hospital	Gen	Church	60	30	6	No	I N	1885
Litchfield 6612—Montgomery Co								
St Francis Ho pital	Gen	Church	113	102	8	No	R N	1890
Mackinaw 760—Lazewell Co								
Oak Knoll Sanatorium	TB	County	45	43		No	R N	1911
Macomb 809—McDonough Co								
Marquette Phelps Hospital	Gen	Indep	40	25	6	No	R N	1900
St Francis Hospital	Gen	Church	70	45	10	Yes	I N	1901
Mattoon 1149—Kankakee Co								
Mattoon State Hospital	N & M	State	1000	New		No	M D	1910
Mattoon 1474—Coles Co								
Memorial Methodist Hosp	Gen	Church	40	23	8	No	R N	1905
McLeansboro 2102—Hamilton Co								
McLeansboro Hospital	Gen	Indiv	10	4	1	No	M D	1910
Melroe e Park 10741—Cook Co								
Westlake Ho pital	Gen	Indep	60	31	15	No	R N	1915
Menard 2 —Randolph Co								
Chester State Hospital	N & M	State	465	500		No	M D	1911
Mendota 4005—La Salle Co								
Harris Ho pital	Gen	Indiv	20	8	3	No	I N	1913
Milledgeville 50—Carroll Co								
General Ho pital	Gen	Indiv	10	3	4	No	M D	1915
Minonk 1910—Woodford Co								
Woodford County Tuber Sanatorium	TB	County	1	10		No	I N	1911
Moline 2025—Rock Island Co								
Lutheran Ho pital	Gen	Church	100	50	20	No	R N	1905
Moline City Ho pital	Gen	City	100	50	20	No	R N	1905
Monmouth 5692—Warren Co								
Monmouth Ho pital	Gen	City	40	20	6	No	R N	1910
Morris —Grundy Co								
Morris Ho pital	Gen	City	70	35	11	No	R N	1915
Mt Vernon 1000—Jefferson Co								
Mt Vernon Ho pital	Gen	Indiv	40	20	4	No	M D	1915
Moweaqua 1455—Henry Co								
Moweaqua Ho pital	Gen	Indiv	25	12	10	No	R N	1915
Murphyboro 811—Jackson Co								
St Anthony Ho pital	Gen	Church	50	25	4	No	I N	1915
Naperville 1115—Du Page Co								
Naperville Sanatorium	TB	Indiv	5			Yes	I N	1910
Normal City—McLean Co								
Normal Ho pital	Gen	Church	5	1		No	I N	1915
Normal Sanatorium	TB	City	5			No	R N	1915
North Chicago 544—Lake Co								
U.S. Veterans Ho pital								

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Key to symbols and abbreviations is on page 10.2

ILLINOIS—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt R N Layman	Year Est
Ravenswood Hospital*•	Gen	Indep	101	161	2	Yes	M D	1920
Research and Educational Hospital*•	Gen	State	103	161	2	Yes	M D	1920
Roseland Community Hos- pital*•	Gen	Indep	101	65	27	Yes	Lay	1921
St Anne's Hospital*•	Gen	Church	20	60	60	No	Lay	1903
St Bernard's Hospital*•	Gen	Church	100	140	10	No	R N	1903
St Elizabeth's Hospital*•	Gen	Church	200	138	30	Yes	Lay	1887
St Joseph's Hospital*•	Gen	Church	110	125	40	Yes	R N	1880
St Luke's Hospital*•	Gen	Indep	60	497	67	Yes	Lay	1893
St Mary of Nazareth Hos- pital*•	Gen	Church	270	148	24	No	Lay	1894
Sarah Morris Hospital for Children	(Included in Michael Reese Hospital)							
Shriners Hospital for Crip- pled Children	Ortho	Frat	60	60		Yes	R N	1926
South Chicago Community Hospital*•	Gen	Indep	7	42	15	No	R N	1895
South Shore Hospital*•	Gen	Indep	100	71	30	No	Lay	1912
Streeter Hospital	Gen	Indiv	50	20	6	No	M D	1888
Swedish Covenant Hosp*•	Gen	Church	140	90	44	Yes	Lay	1886
U S Marine Hospital*•	Gen	USPHS	100	176		Yes	M D	1883
University Hospital*•	Gen	Indep	100	68	21	No	R N	1907
Washington Blvd Hosp*•	Gen	Indep	100	6	10	Yes	Lay	1915
Washingtonian Home (Included in Washington Park Commu- nity Hospital*•)	Gen	Indep	140	67	20	No	M D	1904
Westmor Memorial Hosp*•	Gen	Church	20	182	25	No	Lay	1888
West Side Hospital*•	Gen	Indep	17	72	22	Yes	R N	1816
Women and Children's Hos	Gen	Indep	100	52	25	Yes	Lay	1860
Woodlawn Hospital	Gen	Indep	140	98	26	No	R N	1927
Chicago Heights 2321—Cook Co	Gen	Church	100	62	15	No	R N	1911
St James Hospital	Gen	Church	100	62	15	No	R N	1911
Clinton 590—De Witt Co	Gen	City	20	14	4	No	Lay	1912
Dr John Warner Hospital	Gen	City	20	14	4	No	Lay	1912
Compton 277—Lee Co	Gen	Indiv	10	8	2	No	M D	1900
Danville 2575—Vermilion Co	Gen	Indep	108	90	12	No	Lay	1890
Lake View Hospital*•	Gen	Church	100	126	25	Yes	Lay	1882
St Elizabeth's Hospital*•	Gen	Church	100	126	25	Yes	Lay	1882
Decatur 5710—Macon Co	Gen	Indep	141	76	24	Yes	Lay	1916
Decatur and Macon County Hospital*•	Gen	Indep	141	76	24	Yes	Lay	1916
Macon County Tuber Sana- torium*	TB	County	80	40		Yes	M D	1917
St Mary's Hospital	Gen	Church	150	113	16	No	R N	1818
Wabash Employees Hosp	Indus	Indus	83	63		Yes	Lay	1903
De Kalb 8545—De Kalb Co	Gen	City	23	16		No	Lay	1919
De Kalb Co Tuber Sanat	TB	County	42	20	12	No	R N	1910
De Kalb Public Hospital	Gen	Church	45	24	8	No	Lay	1922
St Mary's Hospital	Gen	Church	45	24	8	No	Lay	1922
Dixon 9008—Lee Co	Gen	City	60	30	10	Yes	R N	1890
Dixon Public Hospital*•	Gen	State	3130	2737		No	M D	1914
Dixon State Hospital*•	Epil	State	3130	2737		No	M D	1914
Duquoin 7593—Perry Co	Gen	Indep	65	20	10	Yes	R N	1902
Marshall Browning Hosp	Gen	Indep	65	20	10	Yes	R N	1902
Night 2534—Livingston Co	Gen	VetBur	225	200		No	M D	1920
U S Veterans Hospital	Gen	VetBur	225	200		No	M D	1920
East Moline, 10107—Rock Island Co	Gen	State	1850	1789		No	M D	1898
East Moline State Hosp*•	N CM	State	1850	1789		No	M D	1898
East St Louis 74347—St Clair Co	Gen	Church	50	33	6	No	Lay	1890
Christian Welfare Hosp*•	Gen	Church	260	115	30	No	Lay	1890
St Mary's Hospital*•	Gen	Church	260	115	30	No	Lay	1890
Edwardsville 6235—Madison Co	Gen	Church	260	115	30	No	Lay	1890
Madison County Sanit	TB	County	120	43		Yes	M D	1926
Effingham 498—Effingham Co	Gen	Church	60	27	6	No	R N	1870
St Anthony's Hospital	Gen	Church	60	27	6	No	R N	1870
El Dorado 4482—Saline Co	Gen	Indiv	16	8	2	Yes	R N	1913
Eldorado Hospital	Gen	Indiv	16	8	2	Yes	R N	1913
Elgin 3023—Kane Co	Gen	State	3800	3464		No	M D	1810
Elgin State Hospital*•	N&M	State	3800	3464		No	M D	1810
St Joseph's Hospital*•	Gen	Church	130	50	20	No	Lay	1902
Sherman Hospital*•	Gen	Indep	109	78	16	Yes	R N	1887
Elmhurst 1400—Du Page Co	Gen	Indep	77	40	18	No	R N	1906
Elmhurst Hospital*•	Gen	Indep	77	40	18	No	R N	1906
Frankton 6338—Cook Co	Gen	Indep	28	New	2	Yes	M D	1910
Community Hosp (col)	Gen	Indep	138	169	36	Yes	R N	1891
Frankton Hospital*•	Gen	Church	320	135	45	No	R N	1900
St Francis Hospital*•	Gen	Church	320	135	45	No	R N	1900
Evergreen Park 1594—Cook Co	Gen	Church	150	40	24	No	R N	1910
Little Company of Mary Hospital	Gen	Church	150	40	24	No	R N	1910
Fairbury 2310—Livingston Co	Gen	City	10	4	5	No	R N	1914
Fairbury Hospital	Gen	City	10	4	5	No	R N	1914
Flora 4303—Clay Co	Gen	Indiv	12	3	4	Yes	M D	1924
Flora Hospital	Gen	Indiv	12	3	4	Yes	M D	1924
Ft Sheridan 60—Lake Co	Gen	Army	116	61	9	Yes	M D	1890
Station Hospital	Gen	Army	116	61	9	Yes	M D	1890
Freeport 2204—Stephenson Co	Gen	Church	87	59	16	No	R N	1904
Evangelical Deaconess Hos- pital*•	Gen	Church	40	20	5	No	M D	1907
Freeport M E Mem Hosp*•	Gen	Church	108	50	18	No	R N	1899
St Francis Ho pital*•	Gen	Church	108	50	18	No	R N	1899
Galesburg 2830—Knob Co	Gen	Indep	6	30	10	No	Lay	1891
Galesburg Cottage Hosp*•	Gen	Indep	190	61	10	No	Lay	1913
St Mary's Hospital	Gen	Church	190	61	10	No	Lay	1913
Geneseo 3400—Henry Co	Gen	City	14	4	3	No	R N	1901
St O Hammond City Hosp	Gen	City	14	4	3	No	R N	1901
Geneseo 4607—Kane Co	Gen	Indep	6	29	18	No	Lay	1919
Hammond Ho pital*•	Gen	Indep	6	29	18	No	Lay	1919
Climax 1630—Iroquois Co	Gen	Indep	14	3	3	No	Lay	1914
Gilman Community Hosp	Gen	Indep	14	3	3	No	Lay	1914
Granite City 2190—Madison Co	Gen	Church	70	61	6	No	Lay	1921
St Elizabeth's Hospital*•	Gen	Church	70	61	6	No	Lay	1921
Great Lakes — Lake Co	Gen	Navy	60	60		No	M D	1911
U S Naval Ho pital*•	Gen	Navy	60	60		No	M D	1911

ILLINOIS—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt R N Layman	Year Est
Harrisburg 1100—Saline Co	Gen	Indiv	0	10	2	Yes	M D	1923
Harrisburg Hospital	Gen	Indiv	0	10	2	Yes	M D	1923
Harvard 2988—McHenry Co	Gen	Part	21	9	4	No	R N	1890
Harvard Community Hosp	Gen	Part	21	9	4	No	R N	1890
Harvey 1674—Cook Co	Gen	Indep	90	40	20	No	R N	1923
Inalls Memorial Hosp*•	Gen	Indep	90	40	20	No	R N	1923
Herrin 9108—Williamson Co	Gen	Part	40	17	4	No	R N	1912
Herrin Ho pital	Gen	Part	40	17	4	No	R N	1912
Highland 310—Madison Co	Gen	Church	60	40	5	No	Lay	1877
St Joseph's Ho pital	Gen	Church	60	40	5	No	Lay	1877
Highland Park 1703—Lake Co	Gen	Indep	53	23	17	No	R N	1918
Highland Park Hospital	Gen	Indep	53	23	17	No	R N	1918
Hillboro 443—Montgomery Co	Gen	Indep	28	15	5	Yes	R N	1916
Hillboro Hospital	Gen	Indep	28	15	5	Yes	R N	1916
Hine — Cook Co	Gen	VetBur	1635	900		No	M D	1921
Edward Hines Jr Hospital	Gen	VetBur	1635	900		No	M D	1921
Hin dale 6921—Du Page Co	Gen	Indep	133	67	15	No	Lay	1904
Hin dale Sanitarium and Hospital*•	Gen	Indep	133	67	15	No	Lay	1904
Jacksonville 1747—Morgan Co	N&M	State	322	3150		No	M D	1847
Jacksonville State Hosp*•	N&M	State	322	3150		No	M D	1847
Norbury Sanatorium	N&M	County	120	96		Yes	M D	1901
Oaklawn Sanatorium	TB	County	30	33		Yes	M D	1922
Our Savior's Hospital*•	Gen	Church	72	39	14	Yes	R N	1810
Passavant Memorial Hosp*•	Gen	Church	72	39	14	Yes	R N	1810
Jerseyville 4509—Jersey Co	Gen	Indiv	15	New	6	No	M D	1930
Jerseyville Hospital	Gen	Indiv	15	New	6	No	M D	1930
John 42903—Will Co	Gen	Church	190	178	40	No	Lay	1880
St Joseph's Hospital*•	Gen	Church	190	178	40	No	Lay	1880
Silver Cro s Ho pital*•	C n	Indep	133	44	18	Yes	Lay	1890
Will County Tuber Sanit	TB	County	60	49		No	M D	1912
Kankakee 2070—Kankakee Co	N&M	State	4021	3832		No	M D	1870
Kankakee State Hospital*•	N&M	State	4021	3832		No	M D	1870
St Mary's Hospital*•	Gen	Church	120	62	18	No	Lay	1890
Kendallworth 9501—Cook Co	N&M	Indiv	32	25		No	M D	1900
Kendallworth Sanitarium	N&M	Indiv	32	25		No	M D	1900
Kewanee 1700—Henry Co	Gen	Indep	32	37	8	No	R N	1919
Kewanee Public Hospital*•	Gen	Indep	32	37	8	No	R N	1919
St Francis Hospital*•	Gen	Church	55	20	10	Yes	R N	1902
La Harpe 1175—Hancock Co	Gen	Indep	14	4	4	No	Lay	1903
Dwyer Memorial Hospital	Gen	Indep	14	4	4	No	Lay	1903
Lake Forest 604—Lake Co	Gen	Indep	43	21	8	No	R N	1890
Allee Home Hospital	Gen	Indep	43	21	8	No	R N	1890
Lake Forest Hospital (Contagious Department of Allee Home Hosp)	Gen	Indep	43	21	8	No	R N	1890
La Salle 19149—La Salle Co	Gen	Church	85	60	15	No	Lay	1887
St Mary's Hospital*•	Gen	Church	85	60	15	No	Lay	1887
Libertyville 3791—Lake Co	Gen	Indep	24	10	6	No	Lay	1920
Condell Memorial Hospital	Gen	Indep	24	10	6	No	Lay	1920
Lincoln 126 —Logan Co	Gen	Church	52	39	8	No	R N	1902
Lyngical Deaconess Hos- pital*•	Gen	Church	52	39	8	No	R N	1902
Lincoln State School and Colonys*•	MenDef	State	2800	0	20	No	M D	1810
St Clara's Hospital	Gen	Church	60	30	6	No	Lay	1880
Litchfield 6012—Montgomery St Francis Hospital	Gen	Church	113	102	8	No	R N	1870
Mackinaw 700—Tazewell Co	TB	County	45	43		No	R N	1901
Oak Knoll Sanatorium	TB	County	45	43		No	R N	1901
Macomb 8509—McDonough Co	Gen	Indep	40	20	6	No	R N	1900
Marietta Phelps Hospital*•	Gen	Church	70	40	9	Yes	Lay	1903
St Francis Hospital*•	Gen	Church	70	40	9	Yes	Lay	1903
Manteno 1140—Kankakee Co	N&M	State	1000	New		No	M D	1810
Manteno State Hospital	N&M	State	1000	New		No	M D	1810
Mattoon 1431—Coles Co	Gen	Church	40	28	6	No	R N	1910
Memorial Methodist Hosp*•	Gen	Church	40	28	6	No	R N	1910
McLeansboro 2102—Hamilton Co	Gen	Indiv	10	4	1	No	M D	1910
McLeansboro Ho pital	Gen	Indiv	10	4	1	No	M D	1910
Melroe Park 10741—Cook Co	Gen	Indep	60	37	10	No	R N	1910
Westlake Hospital*•	Gen	Indep	60	37	10	No	R N	1910
Monard 22—Randolph Co	N&M	State	400	340		No	M D	1810
Chester State Hospital	N&M	State	400	340		No	M D	1810
Mendota 4008—La Salle Co	Gen	Indiv	20	8	3	No	Lay	1918
Harris Ho pital	Gen	Indiv	20	8	3	No	Lay	1918
Willekeville 507—Carroll Co	Gen	Indiv	10	3	4	No	M D	1910
General Hospital	Gen	Indiv	10	3	4	No	M D	1910
Minonk 1910—Woodford Co	Gen	Indiv	10	3	4	No	M D	1910
Woodford County Tuber Sanatorium	TB	County	10	10		No	Lay	1911
Moline 3220—Rock Island Co	Gen	Church	10	10		No	R N	1910
Lutheran Ho pital*•	Gen	Church	100	60	10	No	R N	1910
Moline City Hospital*•	Gen	Church	100	60	10	No	R N	1910
Monmouth 8666—Warren Co	Gen	City	40	20	6	No	R N	1912
Monmouth Ho pital*•	Gen	City	40	20	6	No	R N	1912

ILLINOIS—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinsets	Outpatient Dept	Supt M D	R N Layman	Year Est
Olney 6140—Richland Co	Gen	Indep	75	46	7	Yes	M D	1898	
Olney Sanatorium	Gen	Indiv	10	4	6	No	M D	1924	
Oregon 2376—Ogle Co	Gen	Indiv	10	4	6	No	M D	1924	
Oregon Hospital	Gen	Indiv	10	4	6	No	M D	1924	
Ottawa 15 094—La Salle Co	TB	County	50	45	No	R N	1918		
Highland	Gen	Indiv	26	9	6	No	R N	1917	
Illinois Valley Hospital	Gen	Indiv	72	40	No	Lay	1904		
Ottawa Tuberculosis Sanat	TB	Indiv	72	40	No	Lay	1904		
Palatine 2118—Cook Co	Gen	Indiv	12	7	4	No	R N	1920	
Palatine Hospital	Gen	Indiv	12	7	4	No	R N	1920	
Pana 5835—Christian Co	Gen	Church	50	12	11	No	Lay	1913	
Huber Memorial Hospital	Gen	Indiv	34	15	4	No	M D	1920	
Little Sanitarium	Gen	Indiv	25	15	3	No	M D	1908	
Paris 8781—Edgar Co	Gen	Indiv	25	15	3	No	M D	1908	
Paris Hospital	Gen	Indiv	25	15	3	No	M D	1908	
Pekin 16 129—Tazewell Co	Gen	Indep	20	22	6	No	Lay	1913	
Pekin Public Hospital	Gen	Indep	20	22	6	No	Lay	1913	
Peoria 104 060—Peoria Co	Gen	Indep	100	73	18	No	R N	1882	
John C Proctor Hospital	Gen	Church	186	141	24	No	R N	1890	
Methodist Hospital	Gen	Church	186	141	24	No	R N	1890	
Michell Farm	N&M	Indiv	20	20	No	M D	1917		
Peoria Municipal Tubercu	TB	City	92	80	Yes	M D	1917		
iosis Sanitarium	TB	City	92	80	Yes	M D	1917		
Peoria Sanitarium	N&M	Indiv	20	20	No	M D	1910		
Peoria State Hospital	N&M	State	2 800	2 700	No	M D	1893		
St Francis Hospital	Gen	Church	240	190	30	No	R N	1876	
Peru 9 121—La Salle Co	Gen	Indep	60	33	10	No	R N	1914	
People's Hospital	Gen	Indep	60	33	10	No	R N	1914	
Pinckneyville 3 046—Perry Co	Gen	Indiv	20	8	3	Yes	M D	1916	
Hillier Hospital	Gen	Indiv	20	8	3	Yes	M D	1916	
Pontiac 8 242—Livingston Co	TB	County	30	20	Yes	M D	1917		
Livingston County Sanat	TB	County	30	20	Yes	M D	1917		
St James Hospital	Gen	Church	40	20	10	No	Lay	1906	
Princeton 4 762—Bureau Co	Gen	City	28	23	5	No	R N	1920	
Julia Rackey Perry Me	Gen	City	28	23	5	No	R N	1920	
morial Hospital	Gen	City	28	23	5	No	R N	1920	
Quincy 39 241—Adams Co	TB	County	50	40	No	M D	1918		
Adams Co T B Sanat	TB	County	50	40	No	M D	1918		
Blessing Hospital	Gen	Indep	170	80	22	No	R N	1890	
St Mary's Hospital	Gen	Church	190	140	20	No	R N	1896	
Rantoul 1 555—Champaign Co	Gen	Army	50	18	Yes	M D	1917		
Station Hospital	Gen	Army	50	18	Yes	M D	1917		
Red Bud 1 208—Randolph Co	Gen	Church	20	11	1	No	Lay	1900	
St Clement's Hospital	Gen	Church	20	11	1	No	Lay	1900	
Robinson 3 668—Crawford Co	Gen	Part	16	6	1	No	R N	1916	
Robinson Hospital	Gen	Part	16	6	1	No	R N	1916	
Rockford 8 864—Winnebago Co	Gen	Indep	92	66	18	No	R N	1883	
Rockford Hospital	Gen	Indep	92	66	18	No	R N	1883	
Rockford Municipal Sanit + T B	Gen	City	112	112	Yes	M D	1915		
St Anthony's Hospital	Gen	Church	140	75	30	No	R N	1900	
Swedish American Hosp	Gen	Indep	80	51	12	No	Lay	1918	
Wilgus Sanitarium	N&M	Indiv	35	30	No	M D	1913		
Winnebago County Hosp	Gen	County	95	32	6	No	R N	1926	
Rock Island 37 93—Rock Island Co	TB	County	20	20	No	R N	1916		
Rock Island County Tuber	TB	County	20	20	No	R N	1916		
culosis Sanatorium	TB	County	20	20	No	R N	1916		
St Anthony's Hospital	Gen	Church	150	77	20	Yes	R N	1884	
Rosiclare 1 794—Hardin Co	Indus	Indus	17	4	2	No	M D	1910	
Rosiclare Hospital	Indus	Indus	17	4	2	No	M D	1910	
Rushville 2 388—Schuyler Co	Gen	Indiv	25	10	8	No	Lay	1921	
Culbertson Hospital	Gen	Indiv	25	10	8	No	Lay	1921	
St Charles 5 377—Kane Co	Gen	City	22	12	7	Yes	R N	1920	
St Charles City Hospital	Gen	City	22	12	7	Yes	R N	1920	
Sandwich 2 611—De Kalb Co	Gen	Indep	20	18	10	No	R N	1921	
Horatio N Woodward Me	Gen	Indep	20	18	10	No	R N	1921	
morial Hospital	Gen	Indep	20	18	10	No	R N	1921	
Savanna 5 086—Carroll Co	Gen	City	14	6	5	No	R N	1922	
Savanna City Hospital	Gen	City	14	6	5	No	R N	1922	
Shelbyville 3 491—Shelby Co	Gen	County	18	9	6	No	Lay	1918	
Shelby County Mem Hosp	Gen	County	18	9	6	No	Lay	1918	
Springfield 71 864—Sangamon Co	TB	Indep	85	72	No	R N	1913		
Palmer Tuberculosis Sanat	TB	Indep	85	72	No	R N	1913		
St John's Hospital	Gen	Church	617	480	50	Yes	R N	1875	
St John's Sanitarium	TB Orth	Church	226	226	No	R N	1918		
Springfield Hospital	Gen	Church	100	70	15	No	R N	1897	
Spring Valley 5 240—Bureau Co	Gen	Church	58	46	7	No	Lay	1900	
St Margaret's Hospital	Gen	Church	58	46	7	No	Lay	1900	
Sterling 10 012—Whiteside Co	Gen	City	51	33	12	No	R N	1912	
Public Hospital	Gen	City	51	33	12	No	R N	1912	
Streator 14 728—La Salle Co	Gen	Church	112	70	13	No	R N	1888	
St Mary's Hospital	Gen	Church	112	70	13	No	R N	1888	
Sublette 261—Lee Co	Mater	Indiv	15	4	10	No	M D	1910	
Angear Hospital	Mater	Indiv	15	4	10	No	M D	1910	
Sycamore 4 021—De Kalb Co	Gen	City	20	12	5	No	Lay	1912	
Sycamore Municipal Hosp	Gen	City	20	12	5	No	Lay	1912	
Paylorsville 7 316—Christian Co	Gen	Church	50	30	11	No	Lay	1906	
St Vincent's Hospital	Gen	Church	50	30	11	No	Lay	1906	
Tucola 2 569—Douglas Co	Gen	Indep	20	10	5	No	R N	1918	
Sarah A Jarman Memorial	Gen	Indep	20	10	5	No	R N	1918	
Hospital	Gen	Indep	20	10	5	No	R N	1918	
Urbana 13 060—Champaign Co	Gen	County	54	45	11	No	R N	1912	
Champaign County Hosp	Gen	County	54	45	11	No	R N	1912	
McKinley University Hosp	Gen	State	80	40	No	R N	1923		
Mercy Hospital	Gen	Church	44	35	6	No	R N	1923	
The Outlook	TB	County	48	48	No	M D	1922		
Vandalia 4 342—Fayette Co	Gen	Indiv	25	18	6	Yes	R N	1925	
Mark Greer Hospital	Gen	Indiv	25	18	6	Yes	R N	1925	
Waterman 520—De Kalb Co	Gen	Indiv	30	17	7	No	M D	1901	
East Side Hospital	Gen	Indiv	30	17	7	No	M D	1901	
Watkins 3 144—Iroquois Co	Gen	County	30	20	8	No	R N	1916	
Iroquois Hospital	Gen	County	30	20	8	No	R N	1916	
Waukegan 33 499—Lake Co	Gen	County	70	65	15	Yes	M D	1914	
Lake County General Hosp	Gen	County	70	65	15	Yes	M D	1914	
St Theresa's Hospital	Gen	Church	225	74	35	No	R N	1929	
Victory Memorial Hosp	Gen	Indep	76	41	14	No	R N	1891	

ILLINOIS—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt M D	R N Layman	Year 1 t
White Hall 2 028—Greene Co	Gen	Indiv	10	6	5	No	R N	1 12	
Walton Hospital									
Winfield 44—Du Page Co	TB	Indep	130	96	Yes	Lay		1908	
Winfield Sanatorium	TB	Indiv	50	42	No	R N		1906	
Zeeb Sanatorium									
Woodstock 5 471—McHenry Co	Gen	Indep	20	8	7	No	R N	1908	
Woodstock Hospital									
Zeigler 3 816—Franklin Co	Indus	Indus	20	7	2	No	M D	1919	
Zeigler Hospital									
Related Institutions									
Batavia 5 04—Kane Co	Inst 1	County	50	20	No	Lay		1923	
Kane County Home Hosp									
Belleville 28 47—St Clair Co	Inst 1	Iso County	260	200	4	No	Lay	1941	
St Clair County Home and Isolation Hospital									
Bensenville 1 680—Du Page Co	Inst 1	Church	9	6	No	Lay		1890	
German Evangelical Orphans and Old People's Home									
Chicago 3 376 438—Cook Co	Inst 1	Church	39	6	No	Lay		1960	
Angel Guardian Orphanage									
Baumont Private Nursing Home	Gen	Indiv	26	15	No	Lay		1929	
Beulah Home and Maternity Hospital	Mater	Indep	40	20	24	No	Lay	1899	
Chicago Home for Conv Women and Children	Conv	Indep	53	49	No	Lay		1901	
Chicago Home for Incur	Incur	Indep	260	255	No	M D		1890	
Chicago Home for Friendless	Inst 1	Church	25	19	No	Lay		1880	
Chicago Nursery and Half Orphan Asylum	Inst 1	Indep	16	3	No	Lay		1879	
Church Home for Aged Persons	Inst 1	Church	9	7	No	Lay		1880	
Home for Aged Jews	Inst 1	Indep	10	10	No	Lay		1870	
Home for Destitute Crippled Children	Ortho	Indep	107	97	Yes	Lay		1893	
Iroquois Memorial Emergency Hospital	Emerg	City	20	20	No	M D		1903	
Isolation Hospital	Iso	City	30	3	No	M D		1893	
Lawrence Hall	Inst 1	Church	18	3	No	Lay		1870	
Marks Nathan Jewish Orphan Home	Inst 1	Indep	22	8	No	Lay		1906	
M F Old People's Home	Inst 1	Church	20	20	No	Lay		1898	
Myran Sanitarium	N CM	Indiv	20	10	No	R N		1894	
Orthodox Jewish Home for the Aged	Inst 1	Church	13	5	No	Lay		1902	
Resthaven Conv Home	Conv	Indep	30	18	No	M D		1912	
St Vincent's Infant and Maternity Hospital	Inst 1	Church	15	6	100	No	R N	1889	
Salvation Army Women's Home and Hospital	Mater	Church	12	6	12	No	Lay	1899	
Shore View Manor	Conv	Indiv	20	10	No	R N		1894	
Chicago Heights 22 521—Cook Co	FENT	Indiv	5	2	No	M D		1915	
Chicago Heights Eye Ear Nose and Throat Hosp									
Cleora 66 602—Cook Co	Indus	Indus	12	8	Yes	Lay		1910	
Western Electric Co Hosp									
Danville 36 76—Vermilion Co	Inst 1	Fed	567	550	No	M D		1899	
National Home for Disabled Volunteer Soldiers									
Decatur 57 510—Macon Co	Iso	City	40		No	R N		1931	
City Public Hospital	Inst 1	County	85	42	No	M D		1860	
Edwardsville 6 90—Madison Co	Gen	Indiv	12	4	1	No	R N	1906	
Madison County Hospital									
Lidoroado 4 482—Saline Co	Conv	Indiv	70	65	No	Lay		1906	
Jerrell Hospital									
Elgin 3 020—Kane Co	Chil	Indep	36	24	No	Lay		1923	
Resthaven Sanitarium	Conv	Indep	30	17	No	R N		1902	
Evanston 63 338—Cook Co	Inst 1	Indep	30	30	No	M D		1880	
Cradle Society									
Grove House for Conv									
Forest Park 14 550—Cook Co	Inst 1	State	35	30	Yes	Lay		1894	
German Old People's Home									
Geneva 4 607—Kane Co	MenDef	Indep	80	60	No	M D		1897	
State Training School for Girls									
Godfrey 201—Madison Co	Gen	Part	9	4	4	No	R N	1908	
Beverly Farm									
Henry 1 608—Marshall Co	Inst 1	State	40	10	No	Lay		1847	
Dis Cerebral and Dysart Hospital	Inst 1	State	50	28	No	M D		1846	
Jacksonville 17 747—Morgan Co	Inst 1	State	50	20	Yes	Lay		1860	
Illinois School for Blind									
Illinois School for the Deaf									
Joliet 42 093—Will Co	Inst 1	County	18	7	No	Lay		1832	
Illinois State Penit Hosp									
Knoxville 1807—Knox Co	Inst 1	Frat	21	4	No	Lay		1886	
Knox Co Home & Hosp									
La Grange 10 103—Cook Co	Inst 1	Church	15	5	No	Lay		1894	
Illinois Masonic Orphans Home									
Lake Bluff 1 472—Lake Co	Inst 1	Church	60	20	No	Lay		1896	
Methodist Deaconess Orphanage									
Mattoon 14 631—Coles Co	Inst 1	Frat	72	32	Yes	Lay		1900	
Independent Order Odd Fellows Old Folks Home									
Hospital									
Menard 22—Randolph Co	Inst 1	State	10	3	1	No	M D	1914	
Southern Illinois Penitentiary Hospital									
Metropolis 5 573—Massac Co	Gen	Indiv	10	3	1	No	M D	1914	
Fisher Hospital									

ILLINOIS—Continued

Related Institutions	Type of Service	Control	Beds	Average Patients	Basinsets	Outpatient Dept	Supt M D	R N Layman	Year Est
Moosheart, 1519—Kane Co	Inst'l	Frat	60	40		Yes	Lay	1919	
Moosheart Hospital									
Normal 6768—McLean Co	Inst'l	State	36	12		No	Lay	1868	
Illinois Soldiers' Orphans Home									
Peoria 10496—Peoria Co	Inst'l	City	40	11		No	R N	1910	
Peoria Isolation Hospital									
Postle 8242—Livingston Co	Inst'l	State	33	13		No	Lay	1867	
Illinois State Reformatory									
Quincy 39741—Adams Co	Inst'l	State	200	120		No	M D	1887	
Illinois Soldiers' and Sailors Home and Hospital									
Rockford 85864—Winnebago Co	Inst'l	Indep	20	4		No	R N	1906	
Children's Home									
St Charles 5747—Kane Co	Inst'l	State	33	18		Yes	Lay	1904	
St Charles School for Boys									
Savanna 1086—Carroll Co	Gen	Army	7	2		No	M D	1918	
Station Hospital									
Sullivan 2439—Moultrie Co	Inst'l	Frat	91	83		No	Lay	1903	
Illinois Masonic Home									
Toledo 733—Cumberland Co	Gen	Indiv	5	4	1	No	M D	1909	
Toledo Sanitarium									
Wedron 202—La Salle Co	Conv	Church	4	39		Yes	Lay	1927	
St Joseph's Health Resort									
West Chicago 3477—Du Page Co	Conv	Indep	107	82		No	R N	1911	
Country Home for Convalescent Children									
Wheaton 7938—Du Page Co	N & M	Part	15	12		No	Lay	1908	
Howe Home									
Mary E Pogue Sanitarium and School	N & M	Indiv	3	40		No	M D	1903	
Wheeling 467—Cook Co	Gen	Indiv	9	2	5	No	M D	1924	
Wheeling Hospital									
Wilmington 1741—Will Co	Inst'l	State	3	6		No	Lay	1896	
Soldiers' Widows' Home									
Winnethka 12166—Cook Co	Conv	Indep	80	33		No	M D	1901	
North Shore Health Resort									
Woodstock 5471—McHenry Co	Conv	Indiv	12	8		No	M D	1927	
Dr Weirick's Sanitarium									
Summary for Illinois	Number	Beds	Patients	Basinsets					
Hospitals and sanatoriums	28	64 061	51 061	3 701					
Related institutions	62	3 364	2 410	161					
Totals	347	67 425	53 461	3 862					
Refused registration	74	1 763		177					

INDIANA

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinsets	Outpatient Dept	Supt M D	R N Layman	Year Est
Anderson 39504—Madison Co	Gen	County	50	33	9	No	Lay	1923	
Madison County Ella B Kehr Hospital									
St John's Hospital	Gen	Church	85	59	8	No	Lay	1894	
Angola 2665—Steuben Co	Gen	Indiv	20	9	4	No	R N	1926	
Cameron Hospital									
Argos 1211—Marshall Co	Gen	Indiv	10	6	4	No	R N	1925	
Kelly Hospital									
Auburn 6088—De Kalb Co	Gen	Part	12	6	4	No	M D	1914	
Dr Bonnell M Souder Hospital									
Sander's General Hospital	Gen	Indiv	10	3	1	Yes	R N	1924	
Bedford 13708—Lawrence Co	Gen	County	23	12	3	No	R N	1910	
Dunn Memorial Hospital									
Beech Grove 3532—Marion Co	Gen	Church	75	54	10	No	Lay	1913	
St Francis Hospital									
Bloomington 18227—Monroe Co	Gen	Indep	3	32	8	No	Lay	1904	
Bloomington Hospital									
Bluffton 5074—Wells Co	Gen	County	20	12	4	No	R N	1917	
Wells County Hospital									
Brazil 8744—Clay Co	Gen	County	46	9	10	No	Lay	1925	
Clay County Hospital									
Butterville 430—Jennings Co	N & M	State	388	380		Yes	Lay	1920	
Indiana Farm Colony for Feeble-minded									
Clinton 756—Vermillion Co	Gen	County	33	13	6	No	R N	1924	
Vermillion County Hosp									
Columbus 9933—Bartholomew Co	Gen	County	43	22	4	No	R N	1916	
Bartholomew County Hosp									
Connersville 12739—Fayette Co	Indep		37	1	8	No	R N	1903	
Fayette Memorial Hospital									
Crawfordsville 10333—Montgomery Co	Indiv		10	4		No	M D	1914	
Ben Hur Sanitarium	Gen	County	51	18	12	No	R N	1907	
Culver Hospital									
Crown Point 4046—Lake Co	TB	County	160	123		Yes	M D	1923	
Inake County Tuber Sanat									
Deatur 5156—Adams Co	Gen	County	43	20	3	No	R N	1923	
Adams County Memorial Hospital									
Dillsboro 302—Dearborn Co	Gen	Indep	100	0		No	Lay	1911	
Dillsboro Sanitarium									
East Chicago 54748—Lake Co	Gen	Church	40	110	60	No	R N	1923	
St Catherine's Hospital									
Elkhart 32649—Elkhart Co	Indep		75	40	1	No	R N	1899	
Elkhart General Hospital									
Elwood 1068—Madison Co	Gen	Church	20	12	3	No	R N	1925	
Mercy Hospital									
Franksville 107949—Andersonburg Co	Gen	County	113	93		No	M D	1910	
Boehne Tuberculo Hosp									

INDIANA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinsets	Outpatient Dept	Supt M D	R N Layman	Year Est
Evansville State Hospital	N & M	State	1 200	1 028					1891
Protestant Deaconess Hos	Gen	Church	160	80	21	No	R N	1892	
St Mary's Hospital	Gen	Church	111	80	14	No	R N	1871	
U S Marine Hosp No 8	Gen	USPHS	544	63		Yes	M D	1892	
Walker Hospital	Gen	Indep	115	70	10	No	M D	1893	
Ft Benjamin Harrison — Marion Co	Gen	Army	50	28		Yes	M D	1906	
Station Hospital									
Ft Wayne 114946—Allen Co	Gen	Church	160	103	30	Yes	Lay	1902	
Ft Wayne Lutheran Hos									
Indiana School for Feeble-minded Youth	N & M	State	1 000	1		Yes	Lay	1888	
Irene Byron Tuber Sanat	TB	County	190	169		No	M D	1916	
Methodist Episcopal Hos	Gen	Church	122	64	16	No	M D	1918	
Dr Pulliam's Private Sanit	N & M	Indiv	12	9		Yes	M D	1901	
St Joseph's Hospital	Gen	Church	238	160	57	Yes	R N	1868	
Frankfort 12196—Clinton Co	Gen	County	50	20	8	No	R N	1903	
Clinton County Hospital									
Franklin 682—Johnson Co	Gen	Frat	78	40		No	Lay	1915	
Eastern Star Hospital									
Garrett 4478—De Kalb Co	Gen	Church	43	21	6	No	Lay	1902	
Sacred Heart Hospital									
Gary 100476—Lake Co	Indus	Indus	103	40		Yes	M D	1910	
Gary Hospital									
Methodist Episcopal Hosp	Gen	Church	52	4	18	No	Lay	1923	
St Antonio Hospital	Indep		50	29	10	No	M D	1911	
St John Hospital (col)	Gen	Indiv	14	7	6	Yes	Lay	1909	
St Mary's Mercy Hosp	Gen	Church	221	119	34	No	Lay	1907	
Goshen 10397—Elkhart Co	Gen	City	38	15	12	No	R N	1909	
Goshen Hospital									
Greencastle 4613—Putnam Co	Gen	County	40	13	5	No	R N	1903	
Putnam County Hospital									
Greensburg 5702—Decatur Co	Gen	County	3	8	5	No	R N	1922	
Decatur Co Mem Hosp									
Hammond 64560—Lake Co	N & M	Church	26	20		No	R N	1928	
Mount Mercy Sanitarium									
St Margaret's Hospital	Gen	Church	230	153	38	No	Lay	1898	
Hartford City 6613—Blackford Co	Gen	County	30	9	5	No	R N	1923	
Blackford County Hospital									
Huntington 13490—Huntington Co	Gen	County	2	14	6	No	R N	1913	
Huntington County Hosp									
Indianapolis 364161—Marion Co	N & M	State	1 710	1 040		No	Lay	1848	
Central State Hospital									
Indiana Christian Hosp	Gen	Church	120	6	10	No	M D	1881	
Indianapolis City Hosp	Gen	City	606	337	40	Yes	M D	1886	
James Whiteomb Riley Hos	Gen	State	210	177		Yes	M D	1904	
Julietta Insane Ho pital	N & M	County	230	175		No	Lay	1900	
Methodist Episcopal Hos	Gen	Church	430	318	60	No	Lay	1899	
Neurohursht	N & M	Indep	50	21		No	M D	1888	
Norways Sanatorium	N & M	Indep	25	18		Yes	M D	1888	
Robt W Long Hospital	Gen	State	110	103		Yes	M D	1914	
(Affil)***									
St Vincent's Hospital	Gen	Church	260	160	33	No	R N	1881	
William H Coleman Hosp	Mater	State	63	59	33	Yes	M D	1907	
for Women (Affil)***									
Jeffersonville 11946—Clark Co	Gen	County	3	17	6	No	R N	1902	
Clark County Mem Hosp									
Kendallville 3439—Noble Co	Gen	City	30	11	12	No	R N	1916	
Lakeside Hospital									
Kokomo 32342—Howard Co	Indep		53	17	7	No	R N	1906	
Howard County Hospital									
La Fayette 76940—Tippecanoe Co	Gen	Indep	137	6	20	No	R N	1893	
La Fayette Home Hosp	Gen	Church	250	144	20	No	Lay	1883	
St Elizabeth Hospital									
Wabash Valley Sanitarium and Hospital	Gen	Church	4	27	6	No	M D	1906	
William R's Sanatorium	TB	County	40	20		No	M D	1909	
La Porte 10733—La Porte Co	Gen	Indep	32	18	8	No	Lay	1907	
La Porte Hospital									
Holy Family Hospital	Gen	Church	30	56	13	Yes	Lay	1909	
Lebanon 6441—Boone Co	Gen	Indep	30	10	3	Yes	R N	1908	
Williams Hospital									
Witham Memorial Ho p	Gen	County	30	13	6	No	Lay	1919	
Linton 3033—Greene Co	Gen	County	1	10	3	No	R N	1917	
Freeman Greene Co Ho p									
Logansport 1830—Cass Co	Gen	County	40	3	6	No	R N	1907	
Cass County Hospital									
Loganport State Ho pital	N & M	State	1 433	1 400		No	M D	1903	
St Joseph's Ho pital	Gen	Church	63	3	9	No	Lay	1904	
Madison 630—Jefferson Co	Gen	Church	20	1	5	No	R N	1907	
Kings Daughters Ho pital									
Marion 24406—Grant Co	Gen	Indep	3	7	7	No	R N	1910	
Grant County Hospital									
Martinville 4666—Morris Co	Gen	County	23	8	6	No	R N	1914	
Morgan Co Mem Ho p									
Dr Scherer's New Highland Sanitarium and Clinic	Gen	Indep	1	60		No	M D	1907	
Michigan City 677—La Porte Co	Indu	Indep	42	10	8	No	M D	1907	
The Clinic & Clinic Ho p									
Indiana Ho pital for Insane Criminal	N & M	State	220	220		No	M D	1907	
St Anthony's Ho pital	Gen	Church	100	43	13	No	Lay	1907	
St Anthony's Ho pital									
Whitlatch Clinic	Gen	Indiv	2	8	1	No	M D	1907	
Whitlatch Clinic									
Michawaka 6700—St Joseph Co	Gen	Church	2	1	3	No	R N	1919	
St Joseph Ho pital									
Muncie 438—Delaware Co	Gen	Indep	14	7	1	No	Lay	1907	
Ball Memorial Ho pital									
National Military Home	N & M	State	1 000	1 000		No	M D	1907	
Marion National Sanat									

Key to symbols and abbreviations is on page 1023

INDIANA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt M D R N Layman	Year Est
New Albany 25819—Floyd Co	Gen	Church	125	47	12	No	Lay	1902
St Edward's Hospital	Gen	Church	125	47	12	No	Lay	1902
Newcastle 14 027—Henry Co	Gen	Church	125	47	12	No	Lay	1902
Indiana Village for Epil	Epil	State	834	744	No	M D	1900	
Henry County Hospital	Gen	County	50	12	5	Yes	Lay	1930
Newcastle Clinic Hospital	Gen	Indep	15	12	3	No	M D	1910
Noblesville 4811—Hamilton Co	Gen	County	30	15	1	No	Lay	1914
Hamilton County Hospital	Gen	County	30	15	1	No	Lay	1914
North Madison 573—Jefferson Co	Gen	County	1 444	470	No	M D	1910	
Madison State Hospital	N & M	State	1 444	470	No	M D	1910	
Oaklandon 370—Marion Co	Gen	County	200	248	Yes	M D	1917	
Sunnyside Sanatorium	TB	County	200	248	Yes	M D	1917	
Peru 12 730—Miami Co	Gen	County	43	21	12	No	R N	1913
Dukes Miami County Memorial Hospital	Gen	County	43	21	12	No	R N	1913
Wabash Railroad Employees Hospital	Indus	Indus	50	22	Yes	M D	1880	
Plymouth 5290—Marshall Co	Gen	County	16	12	6	No	R N	1910
Marshall County Hospital	Gen	County	16	12	6	No	R N	1910
C L Morris Hospital	Gen	Part	18	6	6	No	R N	1920
Portland 526—Jay Co	Gen	Indep	14	7	4	No	R N	1917
Jay County Women's Hosp	Gen	Indep	14	7	4	No	R N	1917
Princeton 7500—Cibson Co	Gen	Church	30	16	5	No	R N	1917
Methodist Episcopal Hosp	Gen	Church	30	16	5	No	R N	1917
Repselner 2708—Jasper Co	Gen	County	17	14	No	Lay	1917	
Jasper County Hospital	Gen	County	17	14	No	Lay	1917	
Richmond 32 492—Wayne Co	Gen	Indep	123	58	22	No	R N	1900
Reid Memorial Hospital	Gen	Indep	123	58	22	No	R N	1900
Richmond State Hospital	N & M	State	1 219	1 212	No	M D	1880	
Rochester 3518—Tulsa Co	Gen	Indep	15	12	2	No	R N	1907
Woodlawn Hospital	Gen	Indep	15	12	2	No	R N	1907
Rockville 1832—Parke Co	TB	State	170	170	Yes	M D	1907	
Indiana State Sanatorium	TB	State	170	170	Yes	M D	1907	
Seymour 7505—Jackson Co	Gen	Indep	20	18	4	No	R N	1911
Schneck Memorial Hospital	Gen	Indep	20	18	4	No	R N	1911
Shelbyville 10 618—Shelby Co	Gen	City	38	16	4	No	R N	1923
Major Memorial Hospital	Gen	City	38	16	4	No	R N	1923
South Bend 104 193—St Joseph Co	Gen	Indep	150	167	37	Yes	R N	1894
Epworth Hospital	Gen	Indep	150	167	37	Yes	R N	1894
Healthwin Hospital	TB	County	175	153	No	M D	1914	
Pennington Sanitarium	N & M	Indiv	18	14	Yes	M D	1923	
St Joseph Hospital	Gen	Church	120	75	22	Yes	R N	1893
Sullivan 5306—Sullivan Co	Gen	County	50	19	10	No	R N	1918
Mary Sherman Hospital	Gen	County	50	19	10	No	R N	1918
Tell City 4873—Perry Co	Gen	Indiv	10	5	2	Yes	M D	1923
Parkview Hospital	Gen	Indiv	10	5	2	Yes	M D	1923
Terre Haute 62 810—Vigo Co	Gen	Indiv	10	6	2	No	R N	1923
Hoover's Sanatorium (col)	Gen	Church	156	83	23	No	R N	1882
St Anthony's Hospital	Gen	Church	156	83	23	No	R N	1882
Union Hospital	Gen	Indep	167	107	21	No	M D	1892
Union City 3 084—Randolph Co	Gen	Indiv	15	8	4	No	R N	1913
Union City Hospital	Gen	Indiv	15	8	4	No	R N	1913
Valparaiso 8 040—Porter Co	Gen	Indep	20	7	5	No	R N	1896
Christian Hospital	Gen	Indep	20	7	5	No	R N	1896
Vincennes 17 564—Knox Co	Gen	County	92	30	6	No	R N	1903
Good Samaritan Hospital	Gen	County	92	30	6	No	R N	1903
Wabash 8 840—Wabash Co	Gen	County	30	10	6	No	R N	1921
Wabash County Hospital	Gen	County	30	10	6	No	R N	1921
Warsaw 5 730—Kosciusko Co	Gen	Indiv	18	12	2	Yes	R N	1912
McDonald Hospital	Gen	Indiv	18	12	2	Yes	R N	1912
Washington 9 000—Davies Co	Gen	County	40	17	5	No	R N	1914
Davies County Hospital	Gen	County	40	17	5	No	R N	1914
Winchester 4 487—Randolph Co	Gen	County	30	14	4	No	R N	1921
Randolph County Hospital	Gen	County	30	14	4	No	R N	1921

Related Institutions

Anderson 39 804—Madison Co	Indus	Indus	26	Yes	M D	1924	
Delco Remy Emerg Hosp	Indus	Indus	26	Yes	M D	1924	
Madison County Infirmary	Inst l	County	16	15	No	Lay	1894
Lanesville 102 249—Vanderburg Co	N & M	Indiv	15	4	Yes	M D	1923
Highland Sanitarium	N & M	Indiv	15	4	Yes	M D	1923
Ft Wayne 114 946—Allen Co	Inst l	Church	18	10	Yes	M D	
Concordia College Hospital	Inst l	Church	18	10	Yes	M D	
Ft Wayne and Allen County	Inst l	Church	18	10	Yes	M D	
Isolation Hospital	Iso	Cy & Co	10	1	No	Lay	1907
Grace Convalescent Hosp	Conv	Indiv	19	10	No	Lay	1920
Greencastle 4 613—Putnam Co	Inst l	State	20	9	No	Lay	1914
Indiana State Farm Hosp	Inst l	State	20	9	No	Lay	1914
Greensburg, 5 702—Decatur Co	Inst l	Frat	74	72	No	Lay	1900
Lonley Hospital	Inst l	Frat	74	72	No	Lay	1900
Howe 810—Lagrange Co	Inst l	Church	24	8	No	Lay	1894
Howe School Infirmary	Inst l	Church	24	8	No	Lay	1894
Indianapolis 364 161—Marion Co	Inst l	State	14	14	No	M D	1899
Indiana Girls School	Inst l	State	14	14	No	M D	1899
Indianapolis Orphan Asy	Inst l	Indep	12	6	No	Lay	1891
Indiana State School for the Deaf	Inst l	State	22	5	No	Lay	1844
Indiana Woman's Prison	Inst l	State	14	5	No	Lay	1893
Knightsdown 2 209—Henry Co	Inst l	State	20	3	No	Lay	1896
Indiana Sailors and Soldiers Children's Home	Inst l	State	20	3	No	Lay	1896
La Fayette 5 240—Tippecanoe Co	Inst l	State	20	3	No	Lay	1896
Indiana State Soldiers Home	Inst l	State	20	3	No	Lay	1896
La Fayette Detention Hosp	Iso	Cy & Co	8	1	No	Lay	1913
Marionville 4 962—Morgan Co	Conv	Indiv	41	20	No	Lay	1890
Cohn Barnard Sanitarium	Conv	Indiv	41	20	No	Lay	1890
Hill House Sanitarium	Conv	Indiv	41	20	No	Lay	1890
Home Yarrow Mineral Springs	Conv	Indep	125	70	No	M D	1890
Marionville Sanitarium	Conv	Indep	125	70	No	M D	1890
National Sanitarium	Conv	Indep	70	30	No	Lay	1897
Whiting Mineral Springs	Conv	Part	45	20	No	M D	1920
Sanitarium and Bath	Conv	Part	45	20	No	M D	1920

INDIANA—Continued

Related Institutions	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt M D R N Layman	Year Est
Michigan City, 26 77—La Porte Co	Inst l	State	130	120	No	M D	1890	
Indiana State Prison Hosp	Inst l	State	130	120	No	M D	1890	
Muncie 46 518—Delaware Co	Iso	City	12	1	No	Lay	1892	
Isolation Hospital	Iso	City	12	1	No	Lay	1892	
Pendleton, 1 538—Madison Co	Inst l	State	100	30	Yes	M D	1891	
Indiana Reformatory	Inst l	State	100	30	Yes	M D	1891	
Plainfield 1 617—Hendricks Co	Inst l	State	30	3	No	Lay	1897	
Indiana Boys School Hosp	Inst l	State	30	3	No	Lay	1897	
Rome City 466—Noble Co	Conv	Church	200	100	No	Lay	1901	
Knepp Sanitarium	Conv	Church	200	100	No	Lay	1901	
Rushville 5 709—Rush Co	Gen	City	11	5	2	No	R N	1929
Rushville City Hospital	Gen	City	11	5	2	No	R N	1929
South Bend 104 193—St Joseph Co	Iso	Cy & Co	8	1	No	M D	1911	
South Bend Iso Hospital	Iso	Cy & Co	8	1	No	M D	1911	
Wilkeson 716—Hancock Co	EENT	Indiv	7	4	No	M D		
Charles Illinois Sanitarium	EENT	Indiv	7	4	No	M D		
Winona Lake 44—Kosciusko Co	Conv	Indiv	22	2	No	Lay	1923	
Winona Lake Convalescent and Rest Home	Conv	Indiv	22	2	No	Lay	1923	
Wolcottville 646—LaGrange Co	Throat	Indiv	12	2	No	M D	1922	
Rarick Tonsil Clinic	Throat	Indiv	12	2	No	M D	1922	
Wolfske 367—Noble Co	Gen	Indiv	8	5	2	Yes	R N	1920
Luckey Hospital	Gen	Indiv	8	5	2	Yes	R N	1920

Summary for Indiana

Hospitals and sanatoriums	Number	Beds	Patients	Basinets
Related Institutions	121	20 795	16 422	1 060
	34	1 083	800	10
Totals	155	22 378	17 222	1 070
Refused registration	14	203		12

IOWA

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt M D R N Layman	Year Est
Akron 1,304—Plymouth Co								
Akron Hospital	Gen	Indiv	14	5	3	No	R N	1920
Albia 4 400—Monroe Co								
Mner's Hospital	Gen	Indiv	30	14	4	Yes	R N	1912
Algona 3 080—Kossuth Co								
Algona Hospital	Gen	Indiv	12	5	5	No	R N	1907
Kossuth Hospital	Gen	Indiv	22	13	4	No	R N	1922
Alta 1 297—Buena Vista Co								
Alta Hospital	Gen	Indep	13	9	5	No	Lay	1912
Anamosa 3 570—Jones Co								
Mercy Hospital	Gen	Church	35	12	5	No	R N	1893
Atlantic 5 580—Cass Co								
Atlantic Hospital	Gen	Indep	86	30	6	No	R N	1903
Battle Creek 803—Ida Co								
New Battle Creek Hospital and Sanitarium	Gen	Indiv	16	12	3	No	R N	1916
Boone, 11 886—Boone Co								
Fennor Moore Hospital	Gen	County	50	25	9	No	R N	1900
Burlington 26 750—Des Moines Co								
Burlington Protestant Hos pital	Gen	Indep	100	72	20	Yes	R N	1897
Des Moines County Asylum	N & M	County	60	60	No	Lay	1890	
Mercy Hospital	Gen	Church	125	62	20	Yes	Lay	1893
St Francis Hospital	Gen	Church	75	18	10	No	Lay	1888
Carroll 4 691—Carroll Co								
St Anthony's Hospital	Gen	Church	100	56	20	No	R N	1905
Cedar Falls 7 362—Black Hawk Co								
Sartori Memorial Hospital	Gen	City	35	18	6	No	R N	1914
Cedar Rapids 56 097—Linn Co								
Mercy Hospital	Gen	Church	150	80	20	Yes	Lay	1900
St Luke's Methodist Hos pital	Gen	Church	175	74	17	No	Lay	1894
Centerville 8 147—Appanoose Co								
Centerville General Hosp	Gen	Indiv	25	18	4	No	R N	1914
St Joseph's Mercy Hosp	Gen	Church	44	23	6	No	R N	1903
Chariton 5 365—Lucas Co								
Xocom Hospital	Gen	Indiv	20	10	3	Yes	M D	1900
Charles City 5 000—Floyd Co								
Cedar Valley Hospital	Gen	City	20	12	6	No	R N	1914
Cherokee 6 443—Cherokee Co								
Cherokee State Hospital	N & M	State	1 300	402	3	No	M D	1909
Sioux Valley Hospital	Gen	Indep	30	22	10	Yes	R N	1916
Clarinda 4 962—Page Co								
Clarinda State Hospital	N & M	State	1 200	414	No	M D	1895	
Clarion 2 578—Wright Co								
Tompkins & Walker Hosp	Gen	Part	10	5	No	Lay	1919	
Clinton 25 790—Clinton Co								
Jane Lamb Memorial Hos pital	Gen	Indep	100	60	12	No	R N	1899
St Joseph Mercy Hospital	Gen	Church	60	34	12	No	R N	1884
Colfax 2 215—Jasper Co								
Colfax Sanitarium	Gen	Indiv	26	18	1	No	M D	1914
Council Bluffs 40 045—Pottawattamie Co								
Jennie Edmundson Memorial Hospital	Gen	Indep	117	78	14	No	Lay	1884
Mercy Hospital	N & M	Church	130	81	18	Yes	Lay	1903
St Bernard Hospital	N & M	Church	235	218	No	Lay	1887	
Cresco 3 069—Howard Co								
St Joseph's Mercy Hosp	Gen	Church	22	8	4	No	Lay	1911
Creston 8 615—Union Co								
Greater Community Hosp	Gen	Indep	50	20	5	No	Lay	1894
Daytonport 60 701—Scott Co								
Mercy Hospital	Gen	Church	118	83	15	No	R N	1869

IOWA—Continued

IOWA—Continued										
Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Business	Outpatient Dept	Supt	M.D.	R.N.	Year Est
Monticello 2239—Jones Co										
John McDonald Hospital	Gen	Indep	28	1	5	No	R	N		1916
Mt Pleasant 3743—Henry Co										
Henry County Soldiers and Sailors Memorial Hosp	Gen	County	22	17	7	No	R	N		1920
Mt Pleasant State Hosp	N&M	State	1500	1437		No	M	D		1850
Muscatine 1678—Muscatine Co										
Bellevue Hospital	Gen	Part	24	11	4	No	R	N		1905
Benjamin Hershey Memorial Hospital	Gen	Indep	50	22	6	No	M	D		1902
Nevada 3133—Story Co										
Iowa Sanit and Hosp	Gen	Church	70	30	6	Yes	M	D		1899
New Hampton 2408—Chickasaw Co										
St Joseph's Hospital	Gen	Church	50	22	9	No	Lay			1917
Newton 1130—Jasper Co										
City Hospital	Gen	City	44	24	11	No	R	N		1917
Oakdale 57—Johnson Co										
State Sanatorium for Tuberculosis	TB	State	338	312		No	M	D		1908
Odebolt 1388—Sac Co										
Odebolt Hospital	Gen	Indiv	10	4	4	No	R	N		1922
Osceola 7794—Fayette Co										
Mersey Hospital	Gen	Church	30	12	5	No	R	N		1920
Onawa 2405—Monona Co										
Onawa Hospital	Gen	Indiv	10	5	2	No	R	N		1923
Orange City 1727—Sioux Co										
De Bey Hospital	Gen	Part	10	4		No	M	D		1912
Osage 2964—Mitchell Co										
St Ann Hospital	Gen	City	10	4	2	No	R	N		1927
Osceola 2871—Clarke Co										
Harker Hospital	Gen	Indiv	20	14	4	No	Lay			1911
Osceola Hospital	Gen	Part	30	10	6	Yes	R	N		1902
Osceola Sanit and Hosp	Gen	Indiv	15	5	3	No	M	D		1900
Oskaloosa 10127—Mahaska Co										
Mersey Hospital	Gen	Indiv	30	18	5	Yes	R	N		1909
Ottumwa 2800—Wapello Co										
Ottumwa Hospital	Gen	Indep	5	36	10	Yes	Lay			1894
St Joseph Hospital	Gen	Church	76	60	12	No	Lay			1914
Sunnyslope Sanatorium	TB	County	50	45		No	Lay			1916
Perry 3881—Dallas Co										
Kings Daughters Hospital	Gen	Church	30	24	6	No	R	N		1913
Postville 1060—Allamakee Co										
Postville Hospital	Gen	Indiv	21	10	1	No	M	D		1912
Red Oak 1778—Montgomery Co										
Red Oak Hospital	Gen	Indiv	12	8	4	No	R	N		1924
Saylor (Des Moines P.O.) 23—Polk Co										
Polk Co Hosp for Insane NCM	Gen	County	160	120		No	M	D		1850
Sheldon 3320—O'Brien Co										
Craig Hospital	Gen	Indiv	14	10	2	No	R	N		1902
Myers Hospital	Gen	Indiv	20	5	5	Yes	M	D		1920
Shenandoah 602—Page Co										
Henry and Catherine Hand Hospital	Gen	Indep	26	18	5	No	R	N		1918
Sibley 1870—Osceola Co										
Osceola Hospital	Gen	Part	18	6	6	No	R	N		1914
Sibley Hospital	Gen	Indiv	10	8	3	Yes	M	D		1902
Sigourney 2722—Keokuk Co										
Sigourney Hospital	Gen	Indiv	11	4	3	No	M	D		1921
Sioux City 7913—Woodbury Co										
Lutheran Hospital	Gen	Church	75	77	12	No	R	N		1902
Methodist Hospital	Gen	Church	120	56	20	No	Lay			1900
St Joseph's Mercy Hosp	Gen	Church	150	120	20	No	R	N		1840
St Vincent's Hospital	Gen	Church	109	73	14	No	Lay			1900
Spencer 3019—Clay Co										
Spencer Hospital	Gen	Indep	12	10		No	R	N		1917
Tokola 1335—Fama Co										
Sac & Fox Tuber Sanat	TB	Indian	88	82		No	M	D		1913
Vinton 372—Benton Co										
Virginia Gas Hospital	Gen	Indep	20		7	No	R	N		1900
Washington 4814—Washington Co										
Washington County Ho p Cen	Gen	County	20	21	6	Yes	R	N		1912
Warrior 4019—Black Hawk Co										
Allen Memorial Ho pital	Gen	Church	73	41	8	No	Lay			1900
Presbyterian Hospital	Gen	Church	73	73	10	No	R	N		1904
St Francis Ho pital	Gen	Church	76	7	14	No	R	N		1911
Waverly 602—Bremer Co										
St Joseph's Mercy Hosp	Gen	Church	40	20	6	No	Lay			1904
West Union 006—Fayette Co										
West Union Community Ho pital	Gen	City	1	4		No	R	N		1901
Williamburg 1219—Iowa Co	Gen	Indiv		10		No	M	D		1900
Watts Ho pital	Gen	Indiv		10		No	M	D		1900
Woodward 901—Dallas Co										
Hospital for Epileptic and School for Feeble minded	LeMI	State	701	407		No	M	D		1914
Related Institutions										
Allerton 54—Wayne Co										
Park Ho pital	Gen	Indiv			1	No	R	N		1909
Ames 1001—Story Co										
Iowa State College Ho p	In tl	State	50	14		Yes	M	D		1900
Anamosa 370—Jones Co										
Reformatory Ho pital	In tl	State	2	10		No	M	D		1904
Belmont 1100—Wright Co										
Belmont Ho pital	Gen	In liv	5	4		No	M	D		1901
Bettendorf 70—Scott Co										
Ma onie Sanitarium	Conv	Inrat	0			No	Lay			1901
Hatton 200—Harrison Co										
Clinton Ho pital	Gen	City	5			No	M	D		1900
Council Bluffs 4015—Lottawanna Co										
Christian Home Orphanage In tl	In tl	State	7	11		No	Lay			1900
City Ho pital	Gen	City	1	2		No	Lay			1900
Iowa School for the Deaf In tl	In tl	State	4	1		No	Lay			1900

Key to symbols and abbreviations is on page 1023

IOWA—Continued

Related Institutions	Type of Service	Control	Beds	Average Patients	Basinsets	Outpatient Dept	Supt M D R N	Year Est
Davenport 607—Scott Co Iowa Soldiers Orphans Home	Inst'l	State	48	27	8	No	Lay	1864
Des Moines 142 550—Polk Co Benedict Home	Mater	Indep	30	28	10	No	Lay	1882
Broadlawns Polk Co Public Hospital Contag Dept	Iso	County	50	15		No	M D	1902
Salvation Army Rescue Home and Mater Hosp	Mater	Church	18	2	15	No	Lay	1899
Idora 200—Hardin Co Iowa Training School for Boys	Inst'l	State	30	7		No	Lay	1885
Ft Madison 13 779—Lee Co Iowa State Penit Hosp	Inst'l	State	26	14		No	Lay	1838
Harlan 314—Shelby Co Harlan Hospital	Gen	Indiv	10	8	1	No	R N	1926
Holstein 1300—Ida Co Holstein Hospital	Gen	Part	10	2		No	M D	1912
Indianola 348—Warren Co Community Hospital	Gen	Indiv	6		4	No	R N	1927
Leon 2 006—Decatur Co Leon Hospital	Emerg	Part	6	2		No	Lay	1918
Marshalltown 17 343—Marshall Co Iowa Soldiers Home Hosp	Inst'l	State	10	11		Yes	M D	1884
Singleton Hospital	LNT	Indiv	10	2		No	M D	1902
Mason City 204—Curro Gordon Co Iowa Odd Fellows and Orphans Home Hospital	Inst'l	Frat	16	12		No	Lay	1924
Milford 1 062—Dickinson Co Milford Hospital	Gen	Indiv		2		No	M D	1908
Orange City 1 727—Sioux Co Doornink Hospital	Gen	Indiv		2	2	No	R N	1929
Primghar 962—O'Brien Co Ward Memorial Hospital	Gen	Indiv	6	2	1	No	Lay	1911
Red Oak 5 778—Montgomery Co Powell School for Backward and Nervous Children	Men's	Part	50	50		No	Lay	1903
Rock Valley 1 204—Sioux Co Rock Valley Hospital	Gen	Indiv	7	1	2	No	M D	1907
Sioux City 79 184—Woodbury Co City Detention Hospital	Iso	Cy & Co	18	1		No	R N	1906
Stacyville 599—Mitchell Co Smith Hospital	Gen	Indiv	7	4	1	No	M D	1916
Stanton 607—Montgomery Co Dr W A Howard's Hosp	Gen	Indiv	7	3		No	M D	1922
Story City 1 434—Story Co Story City Lutheran Hosp	Gen	Church	7	4	2	No	Lay	1914
Toledo 1 882—Tama Co Iowa State Juvenile Home and Hospital	Inst'l	State	20	10		No	Lay	1920
Vinton 3 372—Benton Co Iowa School for the Blind	Inst'l	State	16	2		No	Lay	1833
Waterloo 46 191—Black Hawk Convalescent Home	Conv	Indiv	5	2		No	R N	1924
Waukon 2 596—Allamakee Co Hall Hospital	Mater	Indiv	9	6	8	No	Lay	1922
Wongler and Jeffries Emergency Hospital	Gen	Part	7	3		No	M D	1912
Summary for Iowa								
Hospitals and sanatoriums	129		17 209		14 107		997	
Related Institutions	57		1 008		470		53	
Totals	171		18 217		14 580		1 050	
Refused registration	17		363				33	

KANSAS

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinsets	Outpatient Dept	Supt M D R N	Year Est
Ablene 5 648—Dickinson Co Dickinson County Memorial Hospital	Gen	Indep	26	10	4	No	R N	1923
Anthony 2 947—Harper Co Galloway Hospital	Gen	Indiv	22	21	6	Yes	R N	1923
Arkansas City 13 946—Cowley Co Mercy Hospital	Gen	Indep	47	16	4	No	R N	1904
Stricklen Hospital	Gen	Indiv	27	5	5	No	R N	1928
Atchison 13 024—Atchison Co Atchison Hospital	Gen	Indep	30	18	6	No	R N	1914
Atwood 1 160—Rawlins Co Hunneberger Hospital	Gen	Indiv	12	6		No	M D	1919
Bellville 2 783—Republic Co R G Patterson Memorial Hospital	Gen	Church	15	10	4	No	R N	1923
Beloit 3 502—Mitchell Co Community Hospital	Gen	Indep	40	20	10	Yes	R N	1929
Donner Springs 1 837—Wyandotte Co Donner Springs Sanitarium	N & M	Indiv	20	20		No	M D	1890
Coffeyville 16 198—Montgomery Co Coffeyville General Hosp	Gen	Indiv	10	5	2	No	R N	1904
Southeast Kansas Hosp	Gen	Indep	18	7	3	No	R N	1914
Columbus 3 271—Cherokee Co Maud Norton Memorial City Hospital	Gen	City	15	4		No	R N	1917
Concordia 5 782—Cloud Co Concordia Hospital	Gen	Church	30	13	4	Yes	Lay	1919
St Joseph's Hospital	Gen	Church	60	40	10	No	R N	1903

KANSAS—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinsets	Outpatient Dept	Supt M D R N	Year Est
Council Grove 2 898—Morris Co Council Grove Hospital	Gen	Part	10	5	2	No	R N	1916
Dodge City 10 000—Ford Co McCarty Hospital	Gen	Part	20	12		Yes	M D	1903
Protestant Christian Hosp	Gen	Indep	50	40	10	No	Lay	1911
St Anthony's Hospital	Gen	Church	50	40	10	No	Lay	1905
Fidorado 10 311—Butler Co St Luke's Hospital	Gen	Indep	50	27	12	No	R N	1921
Elkhart 1 435—Morton Co Elkhart Hospital	Gen	Indiv	20	6	4	Yes	R N	1911
Ellsworth 2 072—Ellsworth Co Ellsworth Hospital	Gen	Indep	30	19	4	No	R N	1897
Emporia 14 067—Lyon Co Newman Memorial County Hospital	Gen	County (Church)	77	21	14	No	R N	1922
St Mary's Hospital	Gen	Church	70	40	10	No	Lay	1890
Ft Leavenworth 5 020—Leavenworth Co Leavenworth Hospital	Gen	Army	80	40	6	Yes	M D	1877
It Riley 2 610—Cearry Co Station Hospital	Gen	Army	100	60	6	Yes	M D	1853
It Scott 10 761—Bourbon Co Mercy Hospital	Gen	Church	110	80	7	No	R N	1857
Carden City 6 121—Finney Co Bailey Hospital	Gen	Indiv	10	8	2	No	R N	1911
Garden City Hospital	Gen	Indep	50	20	5	No	R N	1901
Girard 2 442—Crawford Co Girard General Hospital	Gen	City	10	5	2	No	R N	1916
Goesell 116—Marion Co Mennonite Bethesda Hosp	Gen	Church	20	9		No	R N	1850
Goodland 3 626—Sherman Co Goodland Memorial Hosp	Gen	Church	20	18	3	No	R N	1922
Great Bend 5 548—Barton Co St Rose Hospital	Gen	Church	60	24	6	No	R N	1910
Halstead 1 413—Harvey Co Halstead Hospital	Gen	Indep	200	100	4	Yes	M D	1904
Hays 4 618—Ellis Co Hays Protestant Hospital	Gen	Church	40	26	8	Yes	Lay	1920
St Anthony's Hospital	Gen	Church	50	50	10	No	R N	1909
Holington 3 001—Barton Co Atkin Hospital	Gen	Indiv	17	10	2	No	M D	1912
Horton 4 019—Brown Co Horton Hospital	Gen	Part	15	10	6	No	M D	1906
Hutchinson 27 087—Reno Co Grace Hospital	Gen	Church	130	50	20	Yes	Lay	1910
St Elizabeth's Mercy Hos	Gen	Church	70	35	10	No	Lay	1910
Independence 12 782—Montgomery Co Mercy Hospital	Gen	Church	50	47	12	Yes	R N	1910
Junction City 7 407—Geary Co Junction City Municipal Hospital	Gen	City	20	12	6	No	Lay	1911
Kansas City 121 857—Wyandotte Co Bell Memorial Hospital	Gen	State	180	116	17	Yes	M D	1906
Bethany Methodist Hosp	Gen	Church	120	99	2	Yes	M D	1898
Douglas Hospital (col)	Gen	Church	20	1	2	Yes	M D	1898
Grandview Sanitarium	N & M	Indiv	37	22		No	M D	1903
Providence Hospital	Gen	Church	65	49	12	No	Lay	1910
St Margaret's Hosp	Gen	Church	200	100	10	No	R N	1887
Kingman 2 752—Kingman Co Kingman Hospital	Gen	Part	12	8		No	R N	1910
Lansing 812—Leavenworth Co State Hospital for Deaf and Dumb	N & M	State	60	60		No	M D	1911
Larned 3 632—Pawnee Co Larned Hospital	Gen	Indep	10		3	No	R N	1900
Larned State Hospital	N & M	State	710	600		No	M D	1914
Lawrence 13 726—Douglas Co Haskell Institute Hospital	Gen	Indian	50	12		No	Lay	1884
Lawrence Hospital	Gen	Indep	50	6	4	Yes	R N	1903
Lawrence Memorial Hosp	Gen	City	52	27	10	No	R N	1910
McConnell Hospital	Gen	Indep	10	4	3	No	Lay	1910
Leavenworth 17 466—Leavenworth Co Cushing Hospital	Gen	Church	20	10	6	No	R N	1812
Evergreen Sanitarium	N & M	Indiv	20	6		No	M D	1910
St John's Hospital	Gen	Church	40	20	7	Yes	R N	1860
Liberal 5 994—Seward Co Lpworth Hospital	Gen	Church	43	3	7	No	Lay	1914
Lincoln 1 730—Lincoln Co City Hospital	Gen	Indiv	10	6	1	No	M D	1900
Little River 618—Rice Co Hoffman Memorial Hosp	Gen	Indep	15	6	3	No	R N	1911
Lyon 2 939—Rice Co Lyons Hospital	Gen	Indep	18	7	3	No	R N	1917
Manhattan 10 130—Riley Co Charlotte Swift Memorial Hospital	Gen	Indep	40	20	9	Yes	R N	1915
Park View Hospital	Gen	Indep	30	17	6	No	Lay	1903
Marysville 4 011—Marshall Co Randall Hospital	Gen	Indiv	16	5	2	No	R N	1927
McPherson 6 147—McPherson Co McPherson County Hosp	Gen	County	50	20	10	No	R N	1909
Mulvane 1 042—Sumner Co A I & S F Railway Hosp	Indus	Indus	60	25		No	M D	1913
Nashville 234—Kingman Co Nashville Hospital	Gen	Indiv	12	9	2	Yes	R N	1914
Newton 11 014—Harvey Co Atwell Christian Hospital	Gen	Indep	41	20	12	Yes	Lay	1887
Bethel Deaconess Home and Hospital	Gen	Church	50	30	12	No	Lay	1905
Norton 2 767—Norton Co Laird Memorial Hospital	Gen	Church	20	12	4	No	R N	1916
State Sanat for Tuberc	TB	State	278	220		Yes	M D	1913
Oswatimie 4 446—Miami Co Oswatimie State Hosp	N & M	State	1 400	1 441		No	M D	1890

Key to symbols and abbreviations is on page 1023

KANSAS—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Bassinets	Outpatient Dept	Supt. R.N.	At D. R.N.	Layman	Year Est
Ottawa 956—Franklin Co	Cen	Indep	15	3	4	No	R N			1914
Ottawa Community Hosp	Indus	Indus	40	21		Yes	M D			1927
Santa Fe Hospital										
Parsons 14903—Labette Co	Cen	Church	3	14	5	No	Lay			1911
Mersey Hospital	Indus	Indus	7	33		Yes	R N			1923
M K & T R R Hospital	Eppl	State	66	649		No	M D			1903
State Hosp for Epileptics										
Pittsburg 1814—Crawford Co	Gen	Church	75	30	4	No	R N			1903
Mt Carmel Hospital										
Pratt 322—Pratt Co	Gen	Indep	70	14	6	No	R N			1919
Ninacah Hospital										
Quinter 10—Gove Co	Gen	Indiv	10	7	5	No	R N			1903
Quinter Hosp and Sanit										
Ransom 431—Ness Co	Gen	Indiv	10	3	2	No	R N			1908
Mid West Hospital										
Sabetha 232—Nemaha Co	Gen	Church	100	32	12	No	R N			1904
St Anthony Murdock Memorial Hospital										
Salina 7015—Saline Co	Gen	Church	50	40	10	No	R N			1921
Asbury Protestant Hosp	Gen	Church	50	30	10	No	R N			1914
St John's Hospital										
Scott City 1544—Scott Co	Gen	Part	12	5	4	No	R N			1921
Bennett and Klippenberger Hospital										
Smith Center 1736—Smith Co	Gen	Indiv	10	4		No	M D			1914
Dr C C Funk's Private Hospital										
Sperryville 703—Ford Co	Gen	Indep	10	7	3	No	M D			1916
Perkins Hospital										
Sterling 1868—Rice Co	Gen	Indep	20	12	3	No	M D			1902
Sterling Hospital										
Syracuse 1333—Hamilton Co	Gen	County	25	New	2	No	R N			1930
Donohue Memorial Hosp										
Topeka 6120—Shawnee Co	Indus	Indus	100	73		Yes	M D			1896
A T & S F Railway Hosp	Gen	Church	9	52	20	No	Lay			1882
Christ's Hospital	T B	Cy & Co	50	38		No	R N			1913
Hillcrest Sanatorium	Cen	Indep	7	50	15	No	R N			1886
Jane C Stormont Hosp	N & M	Indep	32	24		No	M D			1923
Menninger Sanatorium										
Nella Johns Memorial Hospital (col)	Gen	State	20	6		No	Lay			1922
Security Benefit Home and Hospital	Gen	Frat	230	70		No	Lay			1923
St Francis Hospital	Gen	Church	75	46	12	No	Lay			1903
Topeka State Hospital	N & M	State	1764	1706		No	M D			1879
Wamego 1647—Pottawatomie Co	Gen	Cy & Co	15	5	3	No	R N			1921
Genn Hospital										
Wellington 740—Sumner Co	Gen	Indiv	25	9	5	Yes	M D			1916
Hatcher Hospital	Gen	Indep	20	10	8	No	R N			1910
St Luke's Hospital										
Wichita 11110—Sedgwick Co	Gen	Indiv	15	10	2	No	M D			1919
Coffman Hospital	Gen	Church	270	143	30	Yes	R N			1889
St Francis Hospital	T B	County	24	24		No	R N			1916
Sedgwick Co Tuber Sanit	Gen	Church	22	147	26	Yes	Lay			1912
Wesley Hospital	Gen	Church	100	74	15	No	Lay			1879
Wichita Hospital										
Winfield 9398—Cowley Co	Gen	Church	44	30	6	No	R N			1903
St Mary's Hospital	Men/Def	State	92	57		No	Lay			1881
State Training School										
William Newton Memorial Hospital	Gen	City	50	23	11	No	R N			1907
Related Institutions										
Ashland 122—Clark Co	Gen	Indep	11	5	4	No	Lay			1921
Ashland Hospital										
Atchison 13074—Atchison Co	Inst 1	State	17	17		No	Lay			1919
Dell Memorial Hospital	N & M	Indiv	30	20		No	Lay			1889
Prospect Park Sanitarium										
Cherryvale 4251—Montgomery Co	Gen	Indiv	6	1	1	No	M D			1926
Norman Hospital										
Colby 2153—Thomas Co	Gen	Indiv	6	2	2	No	M D			1928
Eddy Hospital										
Ellsworth 2012—Ellsworth Co	Inst 1	State	33	24		No	Lay			1892
Mother Bickerdike Home and Hospital										
Ft Dodge 515—Ford Co	Inst 1	State	40	20		Yes				1896
Kansas State Soldiers Home Hospital										
Humboldt 2—Allen Co	Gen	Indiv	10	4	2	No	M D			1919
Dr Payne's Emerg Hosp										
Lawrence 13796—Douglas Co	Inst 1	State	22	8		Yes	M D			1905
Kansas University Students Hospital and Dispensary										
Leavenworth 17466—Leavenworth Co	Inst 1	County	2	27		No	Lay			1914
County Hospital	N & M	Indiv	20	10		Yes	M D			1883
Linwood Hospital										
U S Penitentiary Hospital	Inst 1	Fed	205	160		Yes	M D			1893
Lebanon 123—Smith Co	Gen	Indiv	10	2	3	No	M D			1903
Lebanon Hospital										
Lincoln 1739—Lincoln Co	Gen	Indiv	7	2	4	No	Lay			1907
Lincoln Hospital										
Manhattan 10106—Riley Co	Inst 1	State	70	5		Yes	M D			1918
Kansas State Agricultural College Hospital										
Marion 1902—Marion Co	Gen	Indep	10	4		No	Lay			1913
Marion Hospital										
Marionville 4013—Marshall Co	Gen	Indiv	8	3	2	No	R N			1916
Marysville Hospital										
National Military Home 210—Leavenworth Co	Inst 1	Fed	40	50		Yes	M D			1885
Disabled Vol Soldiers										
Norwich 47—Kingman Co	Cen	Indiv	9	3		No	M D			1923
Norwich Hospital										

KANSAS—Continued

Related Institutions	Type of Service	Control	Beds	Average Patients	Bassinets	Outpatient Dept	Supt. R.N.	At D. R.N.	Layman	Year Est
Olathe 3636—Johnson Co	Inst 1	State	14	4		Yes	Lay			1864
State School for the Deaf										
Parsons 14903—Labette Co	Gen	Indiv	10	6	3	No	R N			1921
Parsons Hospital and Maternity Home										
Topeka 61120—Shawnee Co	Inst 1	Church	49	49		No	Lay			1904
Methodist Episcopal Home for the Aged	Inst 1	State	24	11		Yes	R N			1879
State Industrial School for Boys (col)										
Wichita 111110—Sedgwick Co	Mater	Church	83	35	9	No	Lay			1921
Salvation Army Home and Hospital	Inst 1	Indep	26	6		No	Lay			1888
Wichita Children's Home Hospital										
Summary for Kansas										
Hospitals and sanatoriums	Number	Beds	Patients	Bassinets						
Related institutions	108	11073	8159	639						
	23	1080	757	30						
Totals	133	12153	8916	669						
Refused registration	19	449		44						

KENTUCKY

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Bassinets	Outpatient Dept	Supt. R. N.	At D. R. N.	Layman	Year Est
Anchorage 564—Jefferson Co	N & M	Indiv	50	40		No	Lay			1912
Hord Sanitarium										
Ashland 29074—Boyd Co	Gen	Church	50	30	6	No	R N			1890
King's Daughters Hosp										
Stephenson Hospital and Clinic	Gen	Indiv	60	47	5	No	R N			
Barbourville 380—Knock Co	Gen	Indiv	15	4	2	No	M D			1922
Logan Hospital										
Berea 1827—Madison Co	Gen	Indep	120	77	2	Yes	R N			1898
Berea College Hospital										
Bowling Green 12348—Warren Co	Gen	City	54	23	8	Yes	R N			1926
City Hospital										
Covington 622—Kenton Co	Gen	Church	30	184	22	Yes	R N			1860
St Elizabeth's Hospital										
William Booth Memorial Hospital	Gen	Church	94	53	18	No	Lay			1915
Cynthiana 486—Harrison Co	Gen	Indep	30	15	5	No	R N			1907
Harrison Memorial Hosp										
Danville 6729—Boyle Co	Gen	County	40	20	4	No	R N			1912
Danville and Boyle County Hospital										
Dayton 9071—Campbell Co	Cen	County	97	50	15	No	R N			1897
Speer's Memorial Hosp										
St Thomas 1000—Campbell Co	Gen	Army	2	14		Yes	M D			1890
Station Hospital										
Frankfort 11626—Franklin Co	Gen	Indep	20	18	4	No	R N			1894
King's Daughters Hospital										
State Institution for Feeble minded Children	Fe M	State	634	610		No	M D			1881
Franklin 3066—Simpson Co	Cen	Indiv	50	20	10	Yes	M D			1905
Southern Kentucky Sanat										
Frenchburg 246—Menfee Co	Gen	Church	20	2		No	M D			1911
Frenchburg Hospital										
Fulton 309—Fulton Co	Gen	Part	10	New		Yes	M D			1900
Curlin Neill Hospital										
Georgetown 420—Scott Co	Gen	Cy & Co	70	10	6	No	R N			1916
John Graves Ford Memorial Hospital										
Glasgow 1042—Barren Co	Gen	County	50	20	10	Yes	R N			1909
Community Ho pital										
Guerrant 21—Breathitt Co	Gen	Church	12	4	1	No	Lay			1910
Highland Hospital										
Harlan 432—Harlan Co	Gen	Indep	70	0	12	Yes	R N			1913
Harlan Hospital										
Harrodsburg 4023—Mercer Co	Cen	Indep	20	9	4	No	R N			1912
Ad Price Memorial Hosp										
Hazard 701—Perry Co	Cen	Indep	70	20	1	Yes	M D			1911
Hazard Ho pital	Cen	Indiv	10	0	1	Yes	R N			1912
Hurst Ho pital										
Hender on 11068—Hender on Co	Cen	Indep	20	19	3	Yes	R N			1911
Hender on Ho pital	Cen	Part	0	6	4	No	R N			1910
No les Hospital										
Hopkinsville 1074—Christian Co	Cen	Indep	27	20		No	P N			1914
Jennia Stuart Mem Ho p	N & M	State	1709	1604		No	M D			1911
We tern State Ho pital										
Hyden 713—Letcher Co	Cen	Ind p	12	0	0	No	R N			1911
Hyden Ho pital										
Jack on 2109—Breathitt Co	Gen	Indiv	70	15		No	R N			1911
Bach Hospital										
Jenkins 246—Letcher Co	Indu	Indu	0	2	10	Yes	M D			1911
Jenkins Ho pital										
Kenvir 121—Harlan Co	Indus	Indu	1	2	1	No	M D			1915
Black Mountain Ho pital										
Lakeland 1—Jefferson Co	N & M	State	200	0		No	M D			1917
Central State Ho pital										
Lel anon 24—Marion Co	Cen	Indiv	14	0	2	No	M D			1911
Bolnick Infirmary	Surge	Indiv	10	0	1	Yes	M D			1910
Elizabeth Hospital										
Lexington 4074—Fayette Co	N & M	State	1709	1604		No	M D			1911
Fa tern State Ho pital										
Good Samaritan Ho p	N & M	Church	200	0	10	Yes	R N			1917
High Oak Sanatorium	N & M	Indiv	0	20		No	M D			1911

KENTUCKY—Continued

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KENTUCKY—Continued

Hospitals and Sanatoriums	Type of Service	County	Beds	Average Patients	Basinets	Outpatient Dept	Supt R N	MD	Year Est
Julius Marks Sanatorium	Children	Gen	177	90	13	No	MD	1910	
St Joseph's Hospital	Children	Gen	177	90	13	No	MD	1910	
Shriners Hosp for Crip	Children	Indep	35	15	4	No	MD	1924	
London 1950—Laurel Co	Gen	Indiv	35	17	5	No	MD	1930	
Pennington General Hosp	Gen	Indiv	30	20		No	MD	1851	
Louisa 1961—Lawrence Co	Gen	Indiv	32	63		Yes	R N	1851	
Louisville 307 74—Jefferson Co	Gen	Indiv	80	56	14	No	R N	1891	
Beechurst Sanitarium	Children	Indep	80						
Children's Tree Hospital	Children	Indep	80						
Jewish Hospital	Gen	Church	100	130	3, 12	No	R N	1851	
John N Norton Memorial	Gen	Church	120	110	20	No	MD	1851	
Infirmary	Gen	State	50	55					
Kentucky Baptist Hosp	Gen	Church	60	65		No	R N	1851	
Kentucky State TB Sanat	Gen	City	415	314	60	Yes	Lay		
Kosar Crippled Children	Children	Ortho	26	24		No	MD		
Louisville City Hospital	Children	N&M	Part						
Louisville Neuropathic San	Children	N&M	Part						
Methodist Episcopal Den	Gen	Church	52	50	10	No	R N	1851	
Methodist Episcopal Den	Gen	Church	52	50	10	No	R N	1851	
Mt St Agnes Sanit	Gen	Indiv	25	30		Yes	R N	1851	
Pope St Hospital (col)	Gen	Indiv	60	84	20	No	R N	1851	
Red Cross Hosp	Gen	Church	135	84	20	No	R N	1851	
St Anthony's Hospital	Gen	Church	300	200					
St Joseph's Infirmary	Gen	Church	127	61	18	No	R N	1851	
St Mary and Elizabeth	Gen	Indiv	35	20		Yes	V		
Stokes Sanatorium	Gen	USPHS	84	4	4	No	M		
U S Marine Hosp No 11	Gen	Indiv	14						
William H Emrich Hosp	Gen	Indiv	50	20	4	Yes			
Lynch 300—Marion Co	Indus	Indus	20	10	3	No			
Lynch Hospital	Gen	Indep	20	10	4	No			
Madisonville 6908—Hopkins Co	Gen	Part	50	25	2	Yes			
Madisonville Hospital	Gen	Part	50	25	2	Yes			
Manchester 715—Clay Co	Gen	Part	14	10	2	Yes			
Anderson & Ricketts Hosp	Gen	Part	40	22	2	Yes			
Martin, 709—Floyd Co	Gen	Part	38	15	5	Yes			
Beaver Valley Hospital	Gen	Part	50	27	3	Yes			
Mayfield 8177—Graves Co	Gen	Part	10	10	3	Yes			
Mayfield Gilliam Hospital	Gen	Part	23	6	3	Yes			
Mayfield Hospital	Gen	Part	65	40	5	Yes			
Mayfield 6557—Mason Co	Gen	Indep	110	39	1	Yes			
Mayfield Hospital	Gen	Indep	100	48	50	Yes			
Maywood 10300—Bell Co	Gen	City	30	18	2	Yes			
Middlesboro Hospital	Gen	City	23	6	3	Yes			
Middlesboro 4300—Montgomery Co	Gen	City	65	40	5	Yes			
Mt Sterling Hosp tal	Gen	Part	874	353					
Mary Chiles Hosp tal	Gen	Part	874	353					
Murray 2891—Calloway Co	Gen	Indiv	100	48	50	Yes			
Murray 2891—Calloway Co	Gen	Indiv	100	48	50	Yes			
Keys Houston Clinic Hosp	Gen	Part	874	353					
Wm Mason Mem Hosp	Gen	Part	874	353					
Outwood—Christian Co	Gen	Part	874	353					
U S Veterans Hospital	Gen	Part	874	353					
Owensboro 2765—Davies Co	Gen	Part	874	353					
Owensboro City Hospital	Gen	Part	874	353					
Owensboro 33541—McCracken Co	Gen	Part	874	353					
Paducah 33541—McCracken Co	Gen	Part	874	353					
Puwart Purrell Isolation Hosp	Gen								
Illinois Central Hospital	Gen	Indep	30	18					
Riverside Hospital	Gen	Indep	44	2					
Paintsville 2411—Johnson Co	Gen	City	20						
Paintsville Hospital	Gen	City	50						
Paris 6204—Bourbon Co	Gen	City	20						
Paris 6204—Bourbon Co	Gen	City	20						
Ho pital	Gen	Indep	50						
Pewee Valley 552—Oldham Co	Gen	Indep	50						
Pewee Valley Rural Sanit	Gen	Church	20						
Sanatorium and Hospital	Gen	Indiv	20						
Pikeville 336—Pike Co	Gen	Indiv	20						
Pikeville Hospital	Gen	Indiv	20						
Methodist Hospital	Gen	Indiv	20						
Pineville 3567—Bell Co	Gen	Indep	16						
Pineville Hospital	Gen	Indep	37						
Stacy Chappell Hospital	Gen	Indep	30						
Princeton 4764—Caldwell Co	Gen	Indep	30						
Princeton Hospital	Gen	Indep	30						
Princeton 6495—Madison Co	Gen	Indiv	30						
Richmond 6495—Madison Co	Gen	Indiv	30						
Pattie A Clay Infirmary	Gen	Indiv	30						
U S Public Health Service	Gen	Indiv	30						
Trachoma Hospital	Gen	Indiv	30						
Seco 1150—Letcher Co	Gen	Indiv	30						
Seco Hospital	Gen	Indiv	30						
Shelbyville 4033—Shelby Co	Gen	Indiv	30						
Shelbyville 4033—Shelby Co	Gen	Indiv	30						
King's Daughters Hospital	Gen	Indiv	30						
Somers 5506—Pulaski Co	Gen	Indiv	30						
Somers 5506—Pulaski Co	Gen	Indiv	30						
Somer et General Hosp tal	Gen	Indiv	30						
Somer 1544—Lincoln Co	Gen	Indiv	30						
Stanford 1544—Lincoln Co	Gen	Indiv	30						
Lincoln County Memorial	Gen	Indiv	30						
Hospital	Gen	Indiv	30						
Versailles 2244—Woodford Co	Gen	Indiv	30						
Woodford County Memorial	Gen	Indiv	30						
Hospital	Gen	Indiv	30						
Waverly Hills 445—Jefferson Co	Gen	Indiv	30						
Waverly Hills Sanatorium	Gen	Indiv	30						
Winchester 5232—Clark Co	Gen	Indiv	30						
Winchester 5232—Clark Co	Gen	Indiv	30						
Clark County Hospital	Gen	Indiv	30						
Guerrant Clinic and Hosp	Gen	Indiv	30						
Related Institutions									
Anrville 101—Jackson Co	Inst 1	Church							
Anrville Institute Infirm	Inst 1	Church							
Anrville 1469—Nicholas Co	Inst 1	Church							
Carlisle 1469—Nicholas Co	Inst 1	Church							
Johnson Memorial Ho pital	Inst 1	Church							
Covington 602—Kenton Co	Inst 1	Church							
Kenton County Infirmary	Inst 1	Church							

Related Institutions

Related Institutions			Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt. R.N.	MD R.N.
Danville 6,729—Boyle Co	Inst 1	State	40	3	No	Lay	1823			
Kentucky School for the Deaf Hospital	Indus	Indus	10	4	No	MD	1896			
Farlington 3,099—Hopkins Co	Inst 1	State	24	5	Yes	MD	1884			
West Kentucky Hospital	Inst 1	State	23	8	4	No	Lay	1923		
Radley 1,900—Johnson Co	Inst 1	State	10	2	Yes	MD	1914			
Kentucky Penitentiary Hospital	Indus	Indus	112	40	No	MD	1839			
Frankfort 11,696—Franklin Co	Inst 1	State	15	3	No	RN	1913			
Kentucky State Reformatory Hospital	Gen	Indep	8	2	1	No	MD	1917		
Winnie Annett Scott Memorial Hospital (col)	Gen	Indiv	23	15	Yes	MD	1909			
Grayson 10,200—Carter Co	Gen	Indiv	23	15	No	Lay	1916			
J. Q. Stovall Memorial Hospital	Inst 1	State	19	7	No	RN	1909			
Greendale 80—Layette Co	Inst 1	State	80	75	No	RN	1909			
Kentucky House of Reform	Indus	Indiv	10	5	6	No	Lay	1884		
Lexington 4,786—Layette Co	Indus	Indiv	10	10	No	Lay	1913			
Levin 3,000—Sanatorium	Incur	Church	10	10	No	Lay	1913			
Louisville 237,744—Jefferson Co	Incur	Church	10	10	No	Lay	1913			
Knox's Daughters Home for Incurables	Water	Church	10	10	No	Lay	1913			
Susan Speed Davis Home and Hospital	Gen	Indep	23	8	No	Lay	1907			
Paducah 3,541—McCracken Co	Inst 1	State	20	5	No	MD	1916			
Highland Sanatorium	Inst 1	State	12	6	No	RN	1923			
Pewee Valley 682—Oldham Co	Inst 1	State	12	6	No	MD	1903			
Kentucky Confederate Home	Inst 1	State	7	5	2	No	RN	1911		
Infirmary	Gen	Indep	19	4	Yes	Lay	1911			
Pinelville 3,367—Bell Co	Inst 1	State	12	7	No	RN	1923			
Continental Nurses Hosp	Inst 1	State	15	6	3	No	MD	1923		
Richmond 5,490—Madison Co	Gen	Indep	12	7	No	Lay	1911			
Eastern Kentucky Colored Hospital	Gen	Indep	12	7	No	Lay	1911			
Gibson Hospital	Gen	Indep	12	7	No	Lay	1911			
Shelby 4,033—Shelby Co	Inst 1	State	15	6	3	No	MD	1923		
Amanda Smith Hosp (col)	Inst 1	State	12	7	No	Lay	1911			
Anna Masons Home of Kentucky	Inst 1	State	12	7	No	Lay	1911			
Smiths Cove 18—Warren Co	Inst 1	State	12	7	No	Lay	1911			
Lucy 1 Owen Hospital	Inst 1	State	12	7	No	Lay	1911			
Somer 6,500—Pulaski Co	Inst 1	State	12	7	No	Lay	1911			
Pulaski County Hospital	Inst 1	State	12	7	No	Lay	1911			
Summary for Kentucky					Number	12,178	9,594	504	504	21
Hospitals and sanatoriums					89	601	2,677	5	5	2
Related Institutions					113	12,779	9,831			
Totals					113	12,779	9,831			
Refused registration					5	109				

LOUISIANA

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt. R.N.	MD R.N.
Alexandria 23,033—Rapides Parish	Gen	Church	63	30	6	No	Lay	
Rapides Hospital	Gen	Vet Bur	419	3.3	10	No	MD	
U S Veterans Hospital	Gen	Indiv	18	10	6	No	RN	
Bastrop 5,121—Morehouse Parish	Gen	Indiv	80	36	6	No	MD	
Baton Rouge 30,729—East Baton Rouge Parish	Gen	Indep	100	60	10	No	MD	
Baton Rouge General Hos	Gen	Church	100	60	10	No	MD	
Our Lady of the Lake Sanatorium	Gen	Church	90	64	10	Yes		
Bogalusa 14,629—Washington Parish	Gen	Indus	10	3	1	No		
Elizabeth Sullivan Memorial Hospital	Gen	Indiv	423	319		Yes		
Breaux Bridge 1,399—St Martin Parish	Gen	Indiv	10	4		No		
Ouville 308—Iberville Parish	Gen	Indiv	15	7	4	No		
U S Marine Hospital	Gen	Indiv	24	12	4	No		
Columbia 700—Caldwell Parish	Gen	Indiv	64	44				
Caldwell Hospital	Gen	Indiv	15	3	2			
Riverview Sanatorium	Gen	Indep	18	2	1			
Converse 291—Sabine Parish	Gen	Indep	21	8	1			
Allen Sanatorium	Gen	Indep	20	8	1			
Covington 3,903—St Tammany Parish	Gen	Indep	23	12				
New Fenwick Sanatorium	Gen	Indep	3,100	3,100				
Crowley 7,666—Acadia Parish	Gen	Indep						
Crowley Sanatorium	Gen	Indep						
De Ridder Sanatorium	Gen	Indep						
De Ridder Sanatorium	Gen	Indep						
Ellzabeth 3,000—Lumbert Oom	Gen	Indep						
Industrial Hospital	Gen	Indep						
Eunice 3,597—St Landry Parish	Gen	Indep						
Eunice Clinic and Hospital	Gen	Indep						
Haynesville 2,541—Calbome Parish	Gen	Indep						
Haynesville Hospital	Gen	Indep						
Haynesville Hospital	Gen	Indep						
Jackson 3,966—East Feliciana Parish	Gen	Indep						
East Louisiana State Hos	Gen	Indep						

LOUISIANA

Totals fused registration		LOUISIANA									
Hospitals and Sanatoriums		Type of Service	Control	Beds	Average Patients	Basinsnts	Outpatient Dept	Supt MD	R N Layman	1917 1929	
	Alexandria 23 03.—Rapides Parish	Gen	Church	63	30	6	No	Lay	1917		
	Rapides Hospital	Gen	VetBur	419	3.3		No	R N	1929		
	U S Veterans Hospital	Gen	Indiv	18	10	6	No	Lay	1908		
	Bastrop 5 121—Morehouse Parish	Gen	Indiv	80	36	6	No	R N	1923		
	Morehouse Hospital	Gen	Indep	100	50	10	No	R N	1923		
	Baton Rouge 20 729—Fast Baton Rouge Parish	Gen	Indep	100	50	10	No	R N	1923		
	Baton Rouge General Hos pital	Gen	Church	100	50	10	Yes	R N	1908		
	Our Lady of the Lake San tarium	Gen	Indus	90	64	10	No	M D	1922		
	Bogalusa 14 029—Washington Parish	Gen	Indus	10	3	1	No	M D	1922		
	Elizabeth Sullivan Memorial Hosp tal	Gen	Indiv	42.3	319		Yes	M D	1921		
	Breaux Bridge 1 399—St Martin Parish	Gen	Indiv	42.3	319		No	M D	1923		
	St Paul Hospital	Gen	Indiv	10	4		No	M D	1926		
	Oarville 308—Iberville Parish	Gen	Indiv	15	7	4	No	R N	1927		
	U S Marine Hospital	Gen	Indiv	24	12	4	No	M D	1897		
	Columbia 760—Caldwell Parish	Gen	Indiv	64	44		No	M D	1913		
	Caldwell Hospital	Gen	Indiv	15	3	2	No	M D	1913		
	Riverview Sanitarium	Gen	Indiv	18	2	1	No	Lay	1920		
	Converse 291—Sabine Parish	Gen	Indiv	15	3	2	No	M D	1913		
	Allen Sanitarium	Gen	Indiv	18	2	1	No	Lay	1920		
	Corington 3 093—St Tammany Parish	Gen	Indiv	18	2	1	No	Lay	1920		
	New Fenwick Sanitarium	Gen	Indiv	18	2	1	No	Lay	1920		
	Crowley 7 66—Acadia Parish	Gen	Indiv	18	2	1	No	Lay	1920		
	Crowley Sanitarium	Gen	Indiv	18	2	1	No	Lay	1920		
	De Ridder 3 747—Beauregard Parish	Gen	Indiv	18	2	1	No	Lay	1920		
	De Ridder Sanitarium	Gen	Indiv	18	2	1	No	Lay	1920		
	Elizabetb 3 000—Allen Parish	Gen	Indiv	18	2	1	No	Lay	1920		
	Industrial Lumber Oom pany Hospital	Indus	Indus	20	8	1	No	M D	1913		
	Euinec 3 597—St Landry Parish	Gen	Indiv	20	8	1	No	M D	1913		
	Euinec Clinic and Hospital Gen	Gen	Indiv	20	8	1	No	M D	1913		
	Euinec 2 541—Claiborne Parish	Gen	Indiv	20	8	1	No	M D	1913		
	Haynesville Hospital	Gen	Indiv	20	8	1	No	M D	1913		
	Haynesville Hospital	Gen	Indiv	20	8	1	No	M D	1913		
	Haynesville 3 866—East Feliciana Parish	Gen	Indiv	20	8	1	No	M D	1913		
	East Louisiana State Hos pital	Gen	Indiv	20	8	1	No	M D	1913		
	East Louisiana State Hos pital	Gen	Indiv	20	8	1	No	M D	1913		

Key to symbols and abbreviations is on page 1023

LOUISIANA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Sup't, R N M D Layman	Year Est
Lafayette 1433—Lafayette Parish	Parish							
Lafayette Sanitarium	Gen	Indep	23	16	1	No	R N	1906
St John Hospital	Cen	Indiv	23	12		No	R N	1919
Jake Charles 15 91—Calcasieu Parish	Parish							
St Patrick's Sanitarium	Cen	Church	80	33	10	No	I ay	1908
Lecompte 1247—Rapides Parish	Sh							
Lecompte Sanitarium	Gen	Part	18	6	2	Yes	R \	1914
Mansfield 3387—De Soto Parish	Parish							
Mansfield Sanitarium	Gen	Indep	32	11	3	Yes	M D	1913
Minden 569—Webster Parish	Parish							
Minden Sanitarium	Gen	Indep	35	10	3	No	R N	1926
Monroe 608—Ouachita Parish	Parish							
Riverside Sanitarium	Cen	Indep	60	23	5	No	M D	1923
St Francis Sanitarium	Gen	Church	123	70	13	Yes	R \	1913
Natchitoches 4347—Natchitoches Parish	Parish							
Natchitoches Hospital	Gen	Indep	23	4	4	No	R N	1920
New Iberia 8003—Iberia Parish	Parish							
Dauterive Sanitarium	Gen	Indiv	20	8	2	No	M D	1920
New Orleans 43872—Orleans Parish	Parish							
Charity Hospital	Gen	State	1756	1618	35	Yes	M D	1786
City Hospital for Mental Diseases	N & M City	City	100	75	No	No	M D	1911
Delgado Memorial Hospital (Included in Charity Hospital)	(Included in Charity Hospital)							
Dr. Paul Sanitarium	N & M Church	Church	230	20	No	No	Lay	1876
Diibert Tuberculosis Hospital (Included in Charity Hospital)	(Included in Charity Hospital)							
Eye Ear Nose and Throat Hospital	EFNT	Indep	66	19		Yes	M D	1889
Flint Coodridge Hospital (col.)	Gen	Church	64	30	6	Yes	M D	1896
French Hospital	Gen	Frat	62	30	13	Yes	R N	1844
Hotel Dieu Hospital	Gen	Church	240	169	22	No	Lay	1833
Illinois Central Hospital	Indus	Indus	70	29		Yes	R N	1911
Isolation Hospital	Iso	Cy & Co	120	33		No	Lay	1916
Mary Hospital	Gen	Church	123	60	20	Yes	Lay	1924
New Orleans Hosp & Disp for Women and Children	Cen	Indep	33	20	12	Yes	R N	1906
Richard Milken Memorial Hospital (Included in Charity Hospital)	Gen	Church	200	113	24	No	Lay	1926
Southern Baptist Hosp	Gen	Church	200	113	24	No	Lay	1926
Touro Infirmary	Gen	Indep	386	233	44	Yes	M D	1833
U S Marine Hospital	Gen	USPHS	450	400		Yes	M D	1883
Opelousas 6999—St Landry Parish	Parish							
St Landry Sanitarium	Gen	Indiv	20	12		No	R N	1915
Patterson 2906—St Mary Parish	Parish							
St Mary's Hospital	Gen	Part	33	13	3	No	R N	1906
Pineville 3612—Rapides Parish	Parish							
Central Louisiana State Hospital	N & M	State	1500	1433		No	M D	1906
Plaquemine 5124—Iberville Parish	Parish							
Plaquemine Sanitarium	Gen	Indep	30	7	6	Yes	R N	1923
Pleasant Hill 807—Sabine Parish	Parish							
Pleasant Hill Sanitarium	Gen	Part	14	4	2	Yes	M D	1920
Ruston 4400—Lincoln Parish	Parish							
Ruston Lincoln Sanitarium	Gen	Indep	30	7	1	No	R N	1926
Shreveport 7663—Caddo Parish	Parish							
Highland Sanitarium	Gen	Part	108	64	8	No	R N	1913
Mary Sanitarium (col.)	Cen	Part	17	5	2	Yes	M D	1921
North Louisiana Sanit	Gen	Indep	100	52	10	No	R N	1910
Pines Sanitarium	TB	Indep	80	43		No	M D	1916
T E Schumpert Memorial Sanitarium	Gen	Church	150	50	12	No	R N	1903
Shreveport Charity Hospital	Gen	State	400	363	16	No	M D	1872
Shriners Hospital for Crip-pled Children	Ortho	Frat	501	53		Yes	R N	1922
Trist State Hospital	Gen	Indep	123	48	5	No	R \	1924
Winnsboro 1963—Franklin Parish	Parish							
Winnsboro Sanitarium	Gen	Indep	30	12		No	M D	1929
Zachary 696—Fast Baton Rouge Parish	Parish							
Greenwell Springs Tubercu-losis Hospital	TB	State	70	60		No	M D	1923

Related Institutions								
Baton Rouge 30429—East Baton Rouge Parish	Gen	Inst 1	State	40	20	No	Lay	
Louisiana State Penitentiary Hospital	Inst 1	State	40	20	No	Lay		
Ferriday 202—Concordia Parish	Gen	Part	6	3	2	No	M D	1909
Ferriday Hospital	Gen	Part	6	3	2	No	M D	1909
Homer 2909—Claiborne Co	Gen	Indiv	15	10	Yes	R V	1903	
Homer Sanitarium	Gen	Indiv	15	10	Yes	R V	1903	
Hygea—St Tammany Parish	TB	Indep	50	35	No	R N	1906	
Camp Hygeia Orleans Anti-Tuberculosis League	TB	Indep	50	35	No	R N	1906	
Lecompte 1247—Rapides Parish	Gen	Part	6	3	1	No	M D	1919
Lecompte Hospital	Gen	Part	6	3	1	No	M D	1919
New Orleans 43872—Orleans Parish	Gen	State	1756	1618	35	Yes	M D	1786
New Orleans Convalescent Home	Conv	Indep	30	22	No	Lay	1889	
New Orleans Home for Incurables	Incur	Indep	130	108	No	Lay	1899	
St Anna's Asylum	Inst 1	Church	10	3	No	Lay	1843	
St Vincent's Infant Asylum	Inst 1	Church	10	3	No	Lay	1843	
Soldiers Home Camp Nicholls	Inst 1	State	73	23	No	Lay	1884	
Opelousas 6999—Saint Landry Parish	Gen	Part	10	2	No	M D	1921	
St Rita's Infirmary	Gen	Part	10	2	No	M D	1921	

Summary for Louisiana				
Hospitals and Sanatoriums	Number	Beds	Patients	Basinets
Hospitals and Sanatoriums	11	11600	933	34
Related Institutions	68	11601	933	2
Totals	79	23201	1866	36
Refused registration	2	26		

MAINE

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Sup't, R N, M D, Layman	Year Est
Augusta 17198—Kennebec Co	Gen	Indep	73	40	10	No	R N	1891
Augusta General Hospital	N & M	State	1300	1223	10	No	M D	1836
Bangor 28749—Penobscot Co	TB	Indep	30	11	No	R N	1910	
Bangor Sanatorium	N & M	State	893	912	Yes	M D	1901	
Bangor State Hospital	Gen	Indep	159	146	14	No	M D	1892
Eastern Maine General Hospital	Gen	Indiv	25	14	5	No	R N	1906
Paline Private Hospital	Gen	Indep	34	20	6	No	R N	1897
Bar Harbor 4446—Hancock Co	Gen	Indiv	15	4	3	Yes	R N	1927
Bar Harbor Medical and Surgical Hospital	Gen	Indep	50	22	8	No	R N	1909
Bar Mills 16—York Co	Gen	Indiv	25	10	5	Yes	R N	1922
Buxton Hollis Hospital	Gen	Indep	30	14	6	Yes	R N	1904
Bath 9110—Sagadahoc Co	Gen	Indep	50	13	1	Yes	R N	1901
Bath City Hospital	Gen	Indep	50	23	10	Yes	R N	1897
Belfast 499—Waldo Co	Gen	Indep	35	17	6	Yes	M D	1923
Bradbury Memorial Hosp	Gen	Indiv	20	6	4	No	R N	1903
Waldo Co General Hosp	Gen	Indiv	46	24	6	No	M D	1896
Biddeford 17633—York Co	Gen	Indiv	52	33	5	No	R N	1917
Trull Hospital	Gen	Indiv	20	12	5	Yes	R N	1921
Webber Hospital	Gen	State	189	170	No	M D	1910	
Blue Hill 1429—Hancock Co	Gen	Indep	50	33	10	Yes	R N	1909
Blue Hill Memorial Hosp	Gen	Indep	20	9	7	No	R N	1921
Boothbay Harbor 3076—Lincoln Co	Gen	Indep	40	18	9	Yes	Lay	1918
St Andrew's Hospital	Gen	Indep	23	6	5	No	R N	1917
Brunswick 6144—Cumberland Co	Gen	Indep	144	134	No	M D	1901	
Brunswick Hospital	Gen	Indep	35	21	8	Yes	R N	1906
Calais 340—Washington Co	Gen	Indep	33	21	7	No	I ay	1914
Calais Hospital	Gen	Indep	173	87	16	No	M D	1880
Cape Cottage—Cumberland Co	Gen	Indep	137	92	14	Yes	R N	1852
Station Hospital	Gen	Indiv	13	5	3	No	R N	1913
Caribou—Aroostook Co	Gen	Indiv	100	69	3	Yes	R N	1903
Cary Memorial Hospital	Gen	Indiv	16	12	16	No	R N	1902
Castine 726—Hancock Co	Gen	Indep	120	60	20	Yes	M D	1881
Castine Community Hosp	Gen	Indep	120	143	18	Yes	M D	1885
Eagle Lake 140—Aroostook Co	Gen	Indep	73	18	8	No	M D	1881
Northern Maine Gen Hosp	Gen	Indep	40	32	12	No	R N	1901
Ellsworth 3307—Hancock Co	Gen	Indiv	60	31	11	No	I ay	1913
Hurley Private Hospital	Gen	Indiv	50	42	12	Yes	R N	1913
Fairfield 3579—Somerset Co	Gen	USPHS	72	64	Yes	M D	1881	
Central Maine Sanatorium	N & M	Indiv	11	10	No	M D	1911	
Farmington 1757—Franklin Co	MenDef	State	700	674	Yes	M D	1883	
Franklin County Memorial Hospital	Gen	Indep	47	2	No	R N	1903	
Pt Fairfield 6616—Aroostook Co	Gen	Indep	117	10	No	M D	1903	
Community Hospital	TB	State	67	40	Yes	R N	1903	
Gardiner 3609—Kennebec Co	Gen	Indep	81	70	5	Yes	R N	1911
Gardiner General Hosp	Gen	Indep	4	17	5	No	R N	1913
Greenville Junction 1616—Piscataquis Co	Gen	Indiv	40	2	Yes	M D	1903	
Charles A Dean Hospital	Gen	Indiv	21	17	No	R N	1911	
Hebron 791—Oxford Co	Gen	Indiv	40	17	No	R N	1911	
Western Maine Sanat	Gen	Indiv	18	6	No	M D	1913	
Houlton 686—Aroostook Co	Gen	Indiv	18	6	No	M D	1913	
Aroostook Hospital	Gen	Indiv	18	6	No	M D	1913	
Madigan Memorial Ho p	Gen	Indiv	18	6	No	M D	1913	
Iewiston 34945—Androscoggin Co	Gen	Indiv	18	6	No	M D	1913	
Central Maine Gen Ho p	Gen	Indiv	18	6	No	M D	1913	
St Mary's General Hosp	Gen	Indiv	18	6	No	M D	1913	
Old Town 7266—Penobscot Co	Gen	Indiv	18	6	No	M D	1913	
Deering Private Hospital	Gen	Indiv	18	6	No	M D	1913	
Iortland 70810—Cumberland Co	Chil	Indep	18	6	No	M D	1913	
Children's Hospital	Chil	Indep	18	6	No	M D	1913	
Dr Ioughton's Private Ma-ternity Hospital	Mater	Indiv	18	6	No	M D	1913	
Maine Eye Ear and Throat Hospital	Gen	Indep	18	6	No	M D	1913	
Maine General Hospital	Gen	Indep	18	6	No	M D	1913	
Portland City Hospital	Gen	City	18	6	No	M D	1913	
Queen's Hospital	Gen	Church	18	6	No	M D	1913	
St Barnabas Hospital	Gen	Indiv	18	6	No	M D	1913	
State Street Hospital	Gen	Indiv	18	6	No	M D	1913	
U S Marine Ho pital	Gen	USPHS	18	6	No	M D	1913	
Dr C P Wecott Sanat	N & M	Indiv	18	6	No	M D	1913	
Pownal 462—Cumberland Co	MenDef	State	18	6	No	M D	1913	
Presque Isle 462—Aroostook Co	Gen	Indep	18	6	No	M D	1913	
Ireville 1st Gen Hosp	Gen	Indep	18	6	No	M D	1913	
Northern Maine Sanat	TB	State	18	6	No	M D	1913	
Rockland 90—Knox Co	Gen	Indep	18	6	No	M D	1913	
Knox County Cen Hosp	Gen	Indep	18	6	No	M D	1913	
Rumford 10740—Oxford Co	Gen	Indep	18	6	No	M D	1913	
Rumford Community Hos-pital	Gen	Indep	18	6	No	M D	1913	
Sanford 13392—York Co	Gen	Indep	18	6	No	M D	1913	
Henrietta D Goodall Ho-pital	Gen	Indep	18	6	No	M D	1913	
Skowhegan 643—Somerset Co	Gen	Indiv	18	6	No	M D	1913	
Kennebec Valley Ho pital	Gen	Indiv	18	6	No	M D	1913	
Waterville 144—Kennebec Co	Gen	Indiv	18	6	No	M D	1913	
Elm City Ho pital	Gen	Indiv	18	6	No	M D	1913	
Sisters Ho pital	Gen	Church	18	6	No	M D	1913	
Westbrook 10467—Cumberland Co	Gen	Indiv	18	6	No	M D	1913	
Westbrook Ho pital	Gen	Indiv	18	6	No	M D	1913	
York Village 10467—York Co	Gen	Ind p	18	6	No	M D	1913	
York Ho pital	Gen	Ind p	18	6	No	M D	1913	

MAINE—Continued

Related Institutions	Type of Service	Control	Beds	Average Patients	Bassinets	Outpatient Dept	Supt M D R N, Layman	Year Est	
Bridgton 162—Cumberland Co Northern Cumberland Memorial Hospital	Gen	Indep	10	1	1	No	R N	1920	
Dexter 4063—Falmouth Hosp Plummer Memorial Hosp	Gen	Indep	12	8	3	No	R N	1920	
Dover Foxcroft 3750—Piscataquis Co	Gen	Indiv	8	2	2	No	R N	1930	
Dover Foxcroft Hospital	Gen	Indiv	8	2	2	No	R N	1930	
Last Parsonfield 306—York Co	Conv	Indep	50	2		No	Lay	1910	
Restland	Conv	Indep	50	2		No	Lay	1910	
Freeport 9/3—Cumberland Co	Gen	Part	12	5	4	No	M D	1926	
Freeport Hospital	Gen	Part	12	5	4	No	M D	1926	
Mars Hill 1837—Yorostook Co	Gen	Indiv	8	1		No	Lay	1912	
Mars Hill Hospital	Gen	Indiv	8	1		No	Lay	1912	
Millinocket 580—Penobscot Co	Gen	Indiv	7	6	2	No	M D	1920	
Bryant Hospital	Gen	Indiv	7	6	2	No	M D	1920	
National Soldiers Home 230—Kennebec Co	Inst	Fed	317	174		No	M D	1866	
National Soldiers Home Hospital	Inst	Fed	317	174		No	M D	1866	
Portland 70810—Cumberland Co	Dr Black's Private Mater	Mater	Indiv	10	3	15	No	Lay	1924
Dr Black's Private Mater	Mater	Indiv	10	3	15	No	Lay	1924	
Portland Isolation Cottage	City	City	20	2		No	M D	1892	
Strong 478—Franklin Co	Gen	Indiv	12	10	1	No	R N	1920	
Dr Bell's Hospital	Gen	Indiv	12	10	1	No	R N	1920	
Union 1000—Knox Co	Conv	Indiv	30	2		No	Lay	1908	
Jones Sanitarium	Conv	Indiv	30	2		No	Lay	1908	
Summary for Maine Hospitals and sanatoriums	Number	Beds	Patients	Bassinets					
Related institutions	52	5806	470	349					
	17	612	283	4					
Totals	69	6418	508	354					
Refused registration	4	47		8					

MARYLAND

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Bassinets	Outpatient Dept	Supt M.D. R.N. Layman	Year Est
Aberdeen Proving Ground—Harford Co	Gen	Army	50	7		Yes	M D	1917
Station Hospital	Gen	Army	50	7		Yes	M D	1917
Annapolis 12531—Anne Arundel Co	Gen	Indep	90	12	14	Yes	R N	1901
Annapolis Emergency Hospital	Gen	Indep	90	12	14	Yes	R N	1901
U S Naval Hospital	Gen	Naval	202	40		No	M D	1893
Baltimore 804574—Baltimore City Co	Gen	City	500	456	4	Yes	Lay	1860
Baltimore City Hospitals (General)*	Gen	City	500	456	4	Yes	Lay	1860
Baltimore City Hospitals (Psychopathic)*	N & M	City	300	293		No	Lay	1860
Baltimore City Hospitals (Tuberculosis)*	T B	City	172	126		No	Lay	1904
Baltimore Eye Ear and Throat Charity Hosp	FFNT	Indep	60	23		Yes	R N	1888
Bon Secours Hospital	Gen	Church	67	51	12	No	R N	1919
Children's Hospital	Ortho	Indep	100	80		No	Lay	1912
Church Home & Infirmary	Gen	Church	157	116	19	Yes	R N	1888
Franklin Square Hosp	Gen	Indep	129	81	15	No	Lay	1900
Hospital for Women	Gen	Indep	111	80	24	No	R N	1882
Howard A Kelly Hospital	Sk & Ca	Indep	30	13		No	Lay	1912
Jas Lawrence Kernan Hospital and Indus School for Crippled Children	Ortho	Indep	80	65		Yes	R N	1896
Johns Hopkins Hosp	Gen	Indep	763	602	80	Yes	M D	1867
Maryland General Hosp	Gen	Church	230	160	25	Yes	M D	1882
Mercy Hospital	Gen	Church	203	200	24	Yes	R N	1874
Mt Hope Retreat	N & M	Church	682	610		No	Lay	1840
New Provident Hosp and Free Dispensary (col)*	Gen	Indep	120	82	9	Yes	M D	1894
Presbyterian Eye Ear and Throat Charity Hospital	FFNT	Church	40	11		Yes	R N	1877
St Agnes Hospital	Gen	Church	147	131	18	Yes	R N	1862
St Joseph's Hospital	Gen	Church	200	160	29	Yes	Lay	1864
Sinai Hospital	Gen	Indep	231	176	40	Yes	R N	1881
South Baltimore General Hospital	Gen	Indep	103	64	12	Yes	R N	1903
Station Hospital	Gen	Army	20	15		Yes	M D	1918
Sydenham Hospital	Gen	City	110	70	2	No	M D	1909
Union Memorial Hosp	Gen	Indep	288	179	24	Yes	R N	1884
U S Marine Hospital	Gen	USPHS	1671	209		Yes	M D	1887
University of Maryland Hospital	Gen	State	243	220	20	Yes	M D	1823
Volunteers of America Hosp	Gen	Indep	30	8	4	Yes	Lay	1920
West Baltimore General Hospital	Gen	Indep	165	100	18	Yes	Lay	1914
Cambridge 7467—Dorchester Co	Gen	Indep	75	34	14	Yes	R N	1898
Cambridge Maryland Hospital	Gen	Indep	75	34	14	Yes	R N	1898
Eastern Shore State Hosp	N & M	State	334	307		No	M D	1912
Catonsville—Baltimore Co	N & M	Indiv	4	40		No	M D	1900
Gundry Sanitarium	N & M	Part	5	29		No	M D	1891
Harlem Lodge	N & M	State	1500	1118		No	M D	1797
Spring Grove State Hosp	N & M	State	1500	1118		No	M D	1797
Crisfield 380—Somerset Co	Gen	County	38	14	5	No	R N	1923
Edward W. McCready Memorial Hospital	Gen	County	38	14	5	No	R N	1923
Crownsville—Anne Arundel Co (Waterbury P O)	N & M	State	888	3		No	M D	1910
Crownsville State Hosp	N & M	State	888	3		No	M D	1910
Cumberland 37347—Allegheny Co	T B	Indiv	211	30		No	Lay	1913
Allegheny Co Tuberc Sanat	T B	Indiv	211	30		No	Lay	1913
Allegheny Hospital of the Sisters of Charity	Gen	Church	90	50	10	No	R N	1911
Sylvan Retreat	N & M	County	90	50	10	No	R N	1888

MARYLAND—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Bassinets	Outpatient Dept	Supt M.D. R.N. Layman	Year Est
Foston 4092—Talbot Co	Gen	County	82	60	9	Yes	Lay	1906
Easton Emergency Hosp	Gen	County	82	60	9	Yes	Lay	1906
Fidgewood 110—Harford Co	Gen	Army	60	25		Yes	M D	1918
Station Hospital	Gen	Army	60	25		Yes	M D	1918
Ilkton 3331—Cecil Co	Gen	Part	40	32	7	No	R N	1903
Union Hospital of Cecil Co	Gen	Part	40	32	7	No	R N	1903
Illicott City 1216—Howard Co	N & M	Indep	2	17		No	M D	1900
Patapsco Manor Sanat	N & M	Indep	2	17		No	M D	1900
St George G Meade—Anne Arundel Co	Gen	Army	84	30		Yes	M D	1911
Station Hospital	Gen	Army	84	30		Yes	M D	1911
Tt Howard 908—Baltimore Co	Gen	Army	2	10		No	M D	1900
Station Hospital	Gen	Army	2	10		No	M D	1900
St Washington 415—Prince Georges Co	Gen	Army	28	12		No	M D	1861
Station Hospital	Gen	Army	28	12		No	M D	1861
Frederick 1444—Frederick Co	Gen	Indep	113	70	17	Yes	R N	1901
Frederick City Hospital	Gen	Indep	113	70	17	Yes	R N	1901
Frederick 5588—Allegheny Co	Gen	State	30	13	5	Yes	R N	1913
State General Miner's Hosp	Gen	State	30	13	5	Yes	R N	1913
Harperstown 30861—Washington Co	Gen	County	107	80	15	Yes	Lay	1900
Washington Co Hospital	Gen	County	107	80	15	Yes	Lay	1900
Havre de Grace 398—Harford Co	Gen	City	40	25	10	Yes	R N	1912
Havre de Grace Hospital	Gen	City	40	25	10	Yes	R N	1912
Henryton 27—Carroll Co	T B	State	146	98		No	M D	1923
Maryland Tuberculosis Sanitarium (col)	T B	State	146	98		No	M D	1923
Hampsville 72—Frederick Co	N & M	Indiv	2	2		No	M D	1896
Riggs Cottage Sanitarium	N & M	Indiv	2	2		No	M D	1896
Laurel 25—Prince Georges Co	N & M	Indep	7	65		No	M D	1900
Laurel Sanitarium	N & M	Indep	7	65		No	M D	1900
Mount Wilson—Baltimore Co	T B	State	106	83		No	M D	1906
Mt Wilson Branch Maryland Tuberculosis Sanat	T B	State	106	83		No	M D	1906
Olney 83—Montgomery Co	Gen	Indep	38	24	8	No	R N	1911
Montgomery County General Hospital	Gen	Indep	38	24	8	No	R N	1911
Perry Point 80—Cecil Co	Gen	Indiv	35	11	5	No	M D	1923
U S Veter Hosp No 42	N & M	Vet Bur	108	1008		Yes	M D	1919
Port Deposit 903—Cecil Co	Gen	Indiv	35	11	5	No	M D	1923
Dr C H Richards Private Hospital	Gen	Indiv	35	11	5	No	M D	1923
Prince Frederick 200—Calvert Co	Gen	County	40	15	5	No	M D	
Calvert County Hospital	Gen	County	40	15	5	No	M D	
Reisterstown 100—Baltimore Co	T B	Indep	60	58		No	M D	1908
Mt Pleasant	T B	Indep	60	58		No	M D	1908
Relay—Baltimore Co	N & M	Part	70	20		No	M D	1872
Relay Sanitarium	N & M	Part	70	20		No	M D	1872
Rockville 1422—Montgomery Co	N & M	Indiv	30	28		No	M D	1910
Chestnut Lodge Sanitarium	N & M	Indiv	30	28		No	M D	1910
Salisbury 10097—Wicomico Co	T B	State	440	437		No	M D	1906
Eastern Shore Tuberculosis Sanitarium	T B	State	440	437		No	M D	1906
Peninsula General Hosp	Gen	Indep	92	70	14	No	R N	1890
State Sanatorium 200—Frederick Co	Gen	Indep	92	70	14	No	R N	1890
Maryland Tuberc Sanat	T B	State	440	437		No	M D	1906
Sylvestre 661—Carroll Co	N & M	State	2500	2108		No	M D	1896
Springfield State Hospital	N & M	State	2500	2108		No	M D	1896
Towson—Baltimore Co	Gen	Indiv	22	20		No	M D	1900
Albany Manor	Nerv	Indiv	22	20		No	M D	1900
Hospital for Consumptives	T B	Indep	185	178		No	M D	1894
Sheppard and Lnoch Pratt Hospital	N & M	Indep	200	222		Yes	M D	1891
Related Institutions								
Baltimore 804574—Baltimore City Co	Gen	City	32	18		No	M D	1880
Baltimore City Jail Hosp	Inst	City	32	18		No	M D	1880
Happy Hills Convalescent Home for Children	Conv	Indep	48	48		No	R N	1922
Home for Incurables	Incur	Indep	117	99		No	R N	1883
Home for the Aged of the M E Church	Inst	Church	20	12		No	Lay	1868
Maryland Penitentiary Hos	Inst	State	60	50		Yes	M D	1808
Pine Crest' Siblings Sanatorium	Conv	Indiv	30	20		No	R N	1910
Strathmore Park Hospital	Gen	Indiv	18	8		No	Lay	1926
Chultenham 37—Prince Georges Co	Gen	Indiv	18	8		No	Lay	1926
House of Reformation (col)	Inst	State	14	5		No	Lay	1812
College Park 316—Prince Georges Co	Inst	State	12	4		No	M D	1901
Infirmary Univ of Mary	Inst	State	12	4		No	M D	1901
Illicott City 1216—Howard Co	N & M	Indep	20	5		No	M D	1929
Beth Hill Sanitarium	N & M	Indep	20	5		No	M D	1929
Frederick 14474—Frederick Co	Gen	Indiv	12	2		No	Lay	1868
Maryland State School for the Deaf	Inst	State	12	2		No	Lay	1868
Jessups 161—Anne Arundel Co	Inst	State	40	20		Yes	M D	1878
Maryland House of Correction	Inst	State	40	20		Yes	M D	1878
Leonardtown 607—St Mary's Co	Gen	Indep	23	6	4	No	R N	1912
St Mary's Hospital	Gen	Indep	23	6	4	No	R N	1912
Loch Raven 62—Baltimore City Co	Gen	Indiv	8	2		No	Lay	1890
Maryland Training School for Boys	Inst	State	8	2		No	Lay	1890
Orange Grove (Catonsville P O)—Baltimore Co	Conv	Church	20	24		No	M D	1917
St Gabriel's Home for Convalescent Girls	Conv	Church	20	24		No	M D	1917
Rockville 1422—Montgomery Co	Conv	Indiv	14	14		No	Lay	1923
Waverley Sanatorium	Conv	Indiv	14	14		No	Lay	1923
Summary for Maryland Hospitals and sanatoriums	Number	Beds	Patients	Bassinets				
Related institutions	70	14667	11990	440				
	11	480	320	4				
Totals	81	15147	12310	444				
Refused registration	26	1032	100	20				

Key to symbols and abbreviations is on page 1023

MASSACHUSETTS—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	N R N	Supnt	R N	Year Est
Corey Hill Hospital	Gen	Indep	53	40			No	R N		1874
Free Hospital for Women	Gen	Indep	97	59			Yes	R N		1850
Irumbull Hospital	Gen	Indep	46	3			No	Lay		1923
Cambridge 113 64—Middlesex Co	Gen	City	94	87	20		Yes	R N		1917
Cambridge City Hospital	Gen	Indep	234	104	66		Yes	R N		1871
Cambridge Hospital	Gen	Indep	40	30	5		Yes	M D		1903
Cambridge Relief Hospital	Gen	City	85	83			No	M D		1908
Cambridge Tuber Hospital	TB	Indep	80	51			No	R N		1906
Charlesgate Hospital	Gen	Indep	50	35	20		No	R N		1904
Chster Hospital	Gen	Indep								
Canton 5 816—Norfolk Co	Ortho	State	344	307			No	M D		1907
Massachusetts Hospital School	Gen	Indep	82	62	25		No	R N		1890
Chelsea 43 816—Suffolk Co	Gen	USPHS	167	150			Yes	M D		1860
Chelsea Memorial Hosp	Gen	Navy	600	366			No	M D		1836
U S Marine Hospital	Gen									
U S Naval Hospital	Gen									
Chicopee 3 90—Hampden Co	TB	City	30	22			No	Lay		1911
Health Department Hosp	Gen	Indep	67	28	20		Yes	R N		1880
Clinton 1 817—Worcester Co	Gen	Indiv	18	10	6		No	R N		1921
Clinton Hospital	Gen	Indep	36	23	12		No	R N		1924
Cohasset Private Hosp	Gen	State	2 134	2 020			Yes	M D		1878
Concord 7 477—Middlesex Co	Gen	City	17	11	6		No	R N		1925
Concord Hospital	Gen	Indiv	25	22			No	M D		1911
Danvers 12 97—Essex Co	Gen	Indep	79	34	13		No	R N		1894
Danvers State Hospital	N & M	City	295	235	25		Yes	M D		1894
Dunstable Memorial Hospital	Gen	Church	86	41	24		Yes	Lay		1909
Dunstable Hospital	Gen	Indep	115	68	10		Yes	M D		1909
Durham 7 78—Bristol Co	Gen	Indep	150	99	26		Yes	R N		1900
Cratty Clinic Hospital	Gen	City	189	144	22		Yes	M D		1884
Croft 48 474—Middlesex Co	Gen	State	975	1 002			Yes	M D		1891
Croft Cottage Hosp or	Gen	Indep	130	85	30		No	R N		1890
Whidden Alm Hosp	Gen	State	1 227	1 147			Yes	M D		1907
Full River General Hosp	Gen	Indep	82	47	19		No	R N		1907
St Anne's Hospital	Gen	Church	50	32	15		No	R N		1897
Truesdale Hospital	Gen	Indep	49	16	15		Yes	R N		1912
Union Hospital	Gen	Indep	89	41	17		No	R N		1881
Uitchburg 40 612—Worcester Co	Gen	Indiv	10	5	5		No	M D		1908
Burbank Hospital	Gen	City	107	82	18		No	R N		1916
Buxton 3 44—Norfolk Co	Gen	Indep	60	40	0		No	R N		1888
Foxboro State Hospital	N & M	County	100	81			Yes	M D		1914
Framingham 2 710—Middlesex Co	Gen	Indiv	16	12			No	M D		1910
Framingham Union Hosp	Gen	State	1 227	1 147			Yes	M D		1907
Framingham General Hosp	N & M	City	107	82	18		No	R N		1916
Framingham State Colony	Gen	Indep	50	32	15		No	R N		1897
Henry Heywood Memorial Hospital	Gen	Indep	49	16	15		Yes	R N		1912
Houchoester 24 704—Essex Co	Gen	Indep	89	41	17		No	R N		1881
Admission Culbert Hospital	Gen	Indep	10	5	5		No	M D		1908
Mount Barrington 5 934—Berkshire Co	Gen	City	107	82	18		No	R N		1916
Fairview Hospital	Gen	Indep	60	40	0		No	R N		1888
Greenfield 15 800—Franklin Co	Gen	County	100	81			Yes	M D		1914
Franklin County Public Hospital	Gen	Indiv	16	12			No	M D		1910
Groton 7 434—Middlesex Co	Gen	Indiv	10	5	5		No	M D		1908
Groton General Hospital	Gen	City	107	82	18		No	R N		1916
Groton General Hospital	Gen	Indep	60	40	0		No	R N		1888
Groton General Hospital	Gen	County	100	81			Yes	M D		1914
Groton General Hospital	Gen	Indiv	16	12			No	M D		1910
Groton General Hospital	Gen	State	1 227	1 147			Yes	M D		1907
Groton General Hospital	N & M	City	107	82	18		No	R N		1916
Groton General Hospital	Gen	Indep	50	32	15		No	R N		1897
Groton General Hospital	Gen	Indep	49	16	15		Yes	R N		1912
Groton General Hospital	Gen	Indep	89	41	17		No	R N		1881
Groton General Hospital	Gen	Indiv	10	5	5		No	M D		1908
Groton General Hospital	Gen	City	107	82	18		No	R N		1916
Groton General Hospital	Gen	Indep	60	40	0		No	R N		1888
Groton General Hospital	Gen	County	100	81			Yes	M D		1914
Groton General Hospital	Gen	Indiv	16	12			No	M D		1910
Groton General Hospital	Gen	State	1 227	1 147			Yes	M D		1907
Groton General Hospital	N & M	City	107	82	18		No	R N		1916
Groton General Hospital	Gen	Indep	50	32	15		No	R N		1897
Groton General Hospital	Gen	Indep	49	16	15		Yes	R N		1912
Groton General Hospital	Gen	Indep	89	41	17		No	R N		1881
Groton General Hospital	Gen	Indiv	10	5	5		No	M D		1908
Groton General Hospital	Gen	City	107	82	18		No	R N		1916
Groton General Hospital	Gen	Indep	60	40	0		No	R N		1888
Groton General Hospital	Gen	County	100	81			Yes	M D		1914
Groton General Hospital	Gen	Indiv	16	12			No	M D		1910
Groton General Hospital	Gen	State	1 227	1 147			Yes	M D		1907
Groton General Hospital	N & M	City	107	82	18		No	R N		1916
Groton General Hospital	Gen	Indep	50	32	15		No	R N		1897
Groton General Hospital	Gen	Indep	49	16	15		Yes	R N		1912
Groton General Hospital	Gen	Indep	89	41	17		No	R N		1881
Groton General Hospital	Gen	Indiv	10	5	5		No	M D		1908
Groton General Hospital	Gen	City	107	82	18		No	R N		1916
Groton General Hospital	Gen	Indep	60	40	0		No	R N		1888
Groton General Hospital	Gen	County	100	81			Yes	M D		1914
Groton General Hospital	Gen	Indiv	16	12			No	M D		1910
Groton General Hospital	Gen	State	1 227	1 147			Yes	M D		1907
Groton General Hospital	N & M	City	107	82	18		No	R N		1916
Groton General Hospital	Gen	Indep	50	32	15		No	R N		1897
Groton General Hospital	Gen	Indep	49	16	15		Yes	R N		1912
Groton General Hospital	Gen	Indep	89	41	17		No	R N		1881
Groton General Hospital	Gen	Indiv	10	5	5		No	M D		1908
Groton General Hospital	Gen	City	107	82	18		No	R N		1916
Groton General Hospital	Gen	Indep	60	40	0		No	R N		1888
Groton General Hospital	Gen	County	100	81			Yes	M D		1914
Groton General Hospital	Gen	Indiv	16	12			No	M D		1910
Groton General Hospital	Gen	State	1 227	1 147			Yes	M D		1907
Groton General Hospital	N & M	City	107	82	18		No	R N		1916
Groton General Hospital	Gen	Indep	50	32	15		No	R N		1897
Groton General Hospital	Gen	Indep	49	16	15		Yes	R N		1912
Groton General Hospital	Gen	Indep	89	41	17		No	R N		1881
Groton General Hospital	Gen	Indiv	10	5	5		No	M D		1908
Groton General Hospital	Gen	City	107	82	18		No	R N		1916
Groton General Hospital	Gen	Indep	60	40	0		No	R N		1888
Groton General Hospital	Gen	County	100	81			Yes	M D		1914
Groton General Hospital	Gen	Indiv	16	12			No	M D		1910
Groton General Hospital	Gen	State	1 227	1 147			Yes	M D		1907
Groton General Hospital	N & M	City	107	82	18		No	R N		1916
Groton General Hospital	Gen	Indep	50	32	15		No	R N		1897
Groton General Hospital	Gen	Indep	49	16	15		Yes	R N		1912
Groton General Hospital	Gen	Indep	89	41	17		No	R N		1881
Groton General Hospital	Gen	Indiv	10	5	5		No	M D		1908
Groton General Hospital	Gen	City	107	82	18		No	R N		1916
Groton General Hospital	Gen	Indep	60	40	0		No	R N		1888
Groton General Hospital	Gen	County	100	81			Yes	M D		1914
Groton General Hospital	Gen	Indiv	16	12			No	M D		1910
Groton General Hospital	Gen	State	1 227	1 147			Yes	M D		1907
Groton General Hospital	N & M	City	107	82	18		No	R N		1916
Groton General Hospital	Gen	Indep	50	32	15		No	R N		1897
Groton General Hospital	Gen	Indep	49	16	15		Yes	R N		1912
Groton General Hospital	Gen	Indep	89	41	17		No	R N		1881
Groton General Hospital	Gen	Indiv	10	5	5		No	M D		1908
Groton General Hospital	Gen	City	107	82	18		No	R N		1916
Groton General Hospital	Gen	Indep	60	40	0		No	R N		1888
Groton General Hospital	Gen	County	100	81			Yes	M D		1914
Groton General Hospital	Gen	Indiv	16	12			No	M D		1910
Groton General Hospital	Gen	State	1 227	1 147			Yes	M D		1907
Groton General Hospital	N & M	City	107	82	18		No	R N		1916
Groton General Hospital	Gen	Indep	50	32	15		No	R N		1897
Groton General Hospital	Gen	Indep	49	16	15		Yes	R N		1912
Groton General Hospital	Gen	Indep	89	41	17		No	R N		1881
Groton General Hospital	Gen	Indiv	10	5	5		No	M D		1908
Groton General Hospital	Gen	City	107	82	18		No	R N		1916
Groton General Hospital	Gen	Indep	60	40	0		No	R N		1888
Groton General Hospital	Gen	County	100	81			Yes	M D		1914
Groton General Hospital	Gen	Indiv	16	12			No	M D		1910
Groton General Hospital	Gen	State	1 227	1 147			Yes	M D		1907
Groton General Hospital	N & M	City	107	82	18		No	R N		1916
Groton General Hospital	Gen	Indep	50	32	15		No	R N		1897
Groton General Hospital	Gen	Indep	49	16	15		Yes	R N		1912
Groton General Hospital	Gen	Indep	89	41	17		No	R N		1881
Groton General Hospital	Gen	Indiv	10	5	5		No	M D		1908
Groton General Hospital	Gen	City	107	82	18		No	R N		1916
Groton General Hospital	Gen	Indep	60	40	0		No	R N		1888
Groton General Hospital	Gen	County	100	81			Yes	M D		1914
Groton General Hospital	Gen	Indiv	16	12			No	M D		1910
Groton General Hospital	Gen	State	1 227	1 147			Yes	M D		1907
Groton General Hospital	N & M	City	107	82	18		No	R N		1916
Groton General Hospital	Gen	Indep	50	32	15		No	R N		1897
Groton General Hospital	Gen	Indep	49	16	15		Yes	R N		1912
Groton General Hospital	Gen	Indep	89	41	17		No	R N		1881
Groton General Hospital	Gen	Indiv	10	5	5		No	M D		1908
Groton General Hospital	Gen	City	107	82	18		No	R N		1916
Groton General Hospital	Gen	Indep	60	40	0		No	R N		1888
Groton General Hospital	Gen	County	100	81			Yes	M D		1914
Groton General Hospital	Gen	Indiv	16	12			No	M D		1910
Groton General Hospital	Gen	State	1 227	1 147			Yes	M D		1907
Groton General Hospital	N & M	City	107	82	18		No	R N		1916
Groton General Hospital	Gen	Indep	50	32	15		No	R N		1897
Groton General Hospital	Gen	Indep	49	16	15		Yes	R N		1912
Groton General Hospital	Gen	Indep	89	41	17		No	R N		1881
Groton General Hospital	Gen	Indiv	10	5	5		No	M D		1908
Groton General Hospital	Gen	City	107	82	18		No	R N		1916
Groton General Hospital	Gen	Indep								

MASSACHUSETTS—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt. M.D. R.N. Layman	Year Est.
Melrose 23 170—Middlesex Co	Gen	Indep	100	69	22	Yes	RN	1893
Melrose Hospital	Gen	Indep	135	87	17	Yes	MD	1899
New England Sanitarium and Hospital	N&M	Indiv	15	9		No	MD	1900
Reves Sanatorium	Gen	Indiv	20	8		No	RN	1908
Methuen 21 069—Essex Co	Surg	Indiv	203	233		Yes	MD	1910
Mary L. Barr Sanitarium	Gen	Indep	22	11	8	Yes	RN	1920
Middleboro 8 608—Plymouth Co	Gen	Indep	293	233		Yes	MD	1910
Lakeville State Sanatorium	Gen	Indep	22	11	8	Yes	RN	1920
St. Luke's Hospital	Gen	Indep	22	11	8	Yes	RN	1920
Middleton 1 712—Essex Co	Gen	Indep	300	268		Yes	MD	1921
Essex Sanatorium	Gen	Indep	48	31	13	Yes	RN	1900
Milford 14 741—Worcester Co	Gen	Indep	27	18	12	No	RN	1885
Milford Hospital	Gen	Indep	80	30	12	No	RN	1900
Milton 16 434—Norfolk Co	Gen	Indep	18	9	6	No	RN	1911
Milton Hospital	Gen	Indep	43	38	14	No	RN	1899
Montague City 761—Franklin Co	Gen	Indep	15	11	5	No	RN	1929
Lawrence Memorial Hospital	Gen	Indep	3	13	16	Yes	MD	1900
Nantucket 3 678—Nantucket Co	Gen	Indep	20	20		No	Lay	1830
Nantucket Cottage Hosp	Gen	Indep	28	19	4	Yes	Lay	1884
Natick 13 009—Middlesex Co	Gen	Indep	118	112		No	MD	1909
Leonard Morse Hospital	Gen	Indep	40	20	5	Yes	Lay	1919
Needham 10 840—Norfolk Co	Gen	Indep	60	40	10	Yes	RN	1884
Glover Memorial Hospital	Gen	Indep	20	13	8	No	Lay	1906
New Bedford 112 597—Bristol Co	Gen	Indep	194	123	46	Yes	RN	1881
Acushnet Sanit. & Hosp	Gen	Indep	70	30	10	No	RN	1883
Ashley Sanitarium	Gen	Indep	10	12		No	MD	1897
St. Luke's Hospital	Gen	Indep	128	68	24	No	RN	1885
Sassaquin Sanatorium	Gen	Indep	1 600	1 600		Yes	MD	1888
Union Hospital	Gen	Indep	500	500		No	MD	1921
Newburyport 15 084—Essex Co	Gen	Indep	17	5	10	No	RN	1917
Anna Jaques Hospital	Gen	Indep	1 637	1 541		Yes	MD	1832
Newburyport Homeopathic Hospital	Gen	Indep	297	276		Yes	MD	1909
Newton 65 246—Middlesex Co	Gen	Indep	80	60	20	No	RN	
Newton Hospital	Gen	Indep	27	13	10	No	RN	1921
North Adams 21 621—Berkshire Co	Gen	Indep	1 920	1 215		Yes	MD	1898
North Adams Hospital	Gen	Indep	28	20		No	RN	1911
Dr. Vrooman's Sanitarium	Gen	Indep	60	30	10	No	Lay	1907
Northampton 24 381—Hampshire Co	Gen	Indep	42	34	10	Yes	RN	1908
Cooley Dickinson Hosp.	Gen	Indep	190	106	32	Yes	RN	1874
Northampton State Hosp.	Gen	Indep	100	78	22	No	Lay	1918
U. S. Veterans Hospital	Gen	Indep	66	32	10	Yes	RN	1901
North Dighton 1 224—Bristol Co	Gen	Indep	38	26		Yes	MD	1918
North Grafton 2 340—Worcester Co	Gen	Indep	200	107	24	No	RN	1890
Grafton State Hospital	Gen	Indep	20	8	12	Yes	RN	1926
North Reading 1 94—Middlesex Co	Gen	Indep	12	8	12	No	MD	1917
North Reading State Sanit.	Gen	Indep	100	100		Yes	MD	1923
Norwood 15 049—Norfolk Co	Gen	Indep	370	364		Yes	MD	1898
Norwood Hospital	Gen	Indep	420	403		No	MD	1923
Oak Bluffs 1 337—Dukes Co	Gen	Indep	10	32	40	No	RN	1900
Martha's Vineyard Hosp.	Gen	Indep	135	101	30	Yes	Lay	1873
Palmer 9 577—Hampden Co	Gen	Indep	20	12		No	Lay	1906
Monson State Hospital	Gen	Indep	51	45		No	MD	1891
Wing Memorial Hospital	Gen	Indep	15	6	9	No	RN	1900
Peabody 21 34—Essex Co	Gen	Indep	67	48	19	Yes	RN	1891
Joseph B. Thomas Hosp.	Gen	Indep	50	44		No	RN	1924
Pittsfield 49 677—Berkshire Co	Gen	Indep	135	98		No	MD	1919
Hillcrest Hospital	Gen	Indep	98	86	9	No	RN	1906
House of Mercy Hosp.	Gen	Indep	64	50		No	RN	1898
St. Luke's Hospital	Gen	Indep	300	198	60	No	Lay	1896
Plymouth 13 042—Plymouth Co	Gen	Indep	60	63		Yes	RN	1923
Jordan Hospital	Gen	Indep	188	130	4	Yes	MD	1890
Pocasset 360—Barnstable Co	Gen	Indep	52	43	60	Yes	RN	1906
Barnstable County Sanat.	Gen	Indep	120	71		Yes	RN	1900
Quincy 71 083—Norfolk Co	Gen	Indep	40	40		Yes	MD	1919
Quincy City Hospital	Gen	Indep	75	30	12	Yes	RN	1888
Dr. Reynolds Private Hosp.	Gen	Indep	1 550	1 222		Yes	MD	1884
Whitehouse Maternity Hos.	Gen	Indep	100	100		Yes	MD	1923
Rutland 2 442—Worcester Co	Gen	Indep	370	364		Yes	MD	1898
Central New England Sanatorium	Gen	Indep	420	403		No	MD	1923
Rutland State Sanat.	Gen	Indep	10	32	40	No	RN	1900
U. S. Veterans Hospital	Gen	Indep	135	101	30	Yes	Lay	1873
Salem 43 338—Essex Co	Gen	Indep	20	12		No	Lay	1906
North Shore Babies Hosp.	Gen	Indep	51	45		No	MD	1891
Salem Hospital	Gen	Indep	15	6	9	No	RN	1900
Sharon 3 301—Norfolk Co	Gen	Indep	67	48	19	Yes	RN	1891
Balfour Sanatorium	Gen	Indep	40	40		Yes	MD	1919
Sharon Sanatorium	Gen	Indep	75	30	12	Yes	RN	1888
Somerville 103 606—Middlesex Co	Gen	Indep	1 550	1 222		Yes	MD	1884
Central Hospital	Gen	Indep	100	100		Yes	MD	1923
Chandler Street Hospital	Gen	Indep	370	364		Yes	MD	1898
Somerville Hospital	Gen	Indep	420	403		No	MD	1923
South Dartmouth 1 815—Bristol Co	Gen	Indep	10	32	40	No	RN	1900
Sole of Mar Orthopedic Hos.	Gen	Indep	135	101	30	Yes	Lay	1873
South Hanson 831—Plymouth Co	Gen	Indep	20	12		No	Lay	1906
Plymouth County Hosp.	Gen	Indep	51	45		No	MD	1891
Springfield 149 900—Hampden Co	Gen	Indep	15	6	9	No	RN	1900
City Hospital	Gen	Indep	67	48	19	Yes	RN	1891
Health Department Hosp.	Gen	Indep	40	40		Yes	MD	1919
Mercy Hospital	Gen	Indep	75	30	12	Yes	RN	1888
Shriners Hosp. for Crip.	Gen	Indep	1 550	1 222		Yes	MD	1884
Springfield Hospital	Gen	Indep	100	100		Yes	MD	1923
Wescon Maternity Hosp.	Gen	Indep	370	364		Yes	MD	1898
Wescon Memorial Hosp.	Gen	Indep	420	403		No	MD	1923
Stockbridge 1 762—Berkshire Co	Gen	Indep	10	32	40	No	RN	1900
Austen Riggs Foundation	Gen	Indep	135	101	30	Yes	Lay	1873
Taunton 37 300—Bristol Co	Gen	Indep	20	12		No	Lay	1906
Morton Hospital	Gen	Indep	51	45		No	MD	1891
Taunton State Hosp.	Gen	Indep	15	6	9	No	RN	1900

MASSACHUSETTS—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt. M.D. R.N. Layman	Year Est.
Tewksbury 5 585—Middlesex Co State Infirmary	Gen	State	2 800	2 596	40	No	MD	1884
Vineyard Haven 1 500—Dukes Co U S Marine Hospital	Gen	USPHS	20	20		Yes	MD	1890
Waltham 3 247—Middlesex Co Dr Cousins Hospital	Gen	Indiv	14	5	4	No	MD	1879
Metropolitan State Hosp	N & M	State	1 748	86		No	MD	1890
Walter L Larnald State School	Men Def	State	1 000	1 000		Yes	MD	1884
Waltham Hospital	Gen	Indep	162	88		Yes	R N	1884
Ware 7 380—Hampshire Co Mary Lane Hospital	Gen	Indep	74	24	12	No	R N	1909
Wellesley 11 400—Norfolk Co Channing Sanitarium	N & M	Indep	75	23		No	MD	1879
Wiswall Sanatorium	N & M	Indep	30	20		No	MD	1922
Westboro 6 400—Worcester Co Westboro State Hospital	N & M	State	1 486	1 401		Yes	MD	1887
Westfield 19 77—Hampden Co Noble Hospital	Gen	Indep	93	40	10	No	Lay	1884
Westfield State Sanat +	IB	State	300	282		Yes	MD	1910
Westwood 2 000—Norfolk Co Westwood Lodge	N & M	Indep	21	20		No	MD	1922
Weymouth 20 887—Norfolk Co Weymouth Hospital	Gen	Indep	42	20	18	No	R N	1922
Whitinsville 6 000—Worcester Co Whitinsville Hospital	Indus	Indus	1	11	7	No	R N	1914
Winchendon 6 002—Worcester Co Millers River Hospital	Gen	Indep	2	16	6	No	MD	1900
Winchester 12 719—Middlesex Co Winchester Hospital	Gen	Indep	70	43	10	No	R N	1899
Winthrop 16 400—Suffolk Co Station Hospital	Gen	Army	75	36	5	No	MD	1890
Winthrop Community Hos	Gen	Indep	24	21	10	No	R N	1922
Woburn 19 134—Middlesex Co Charles Choate Memorial Hospital	Gen	Indep	43	33	19	No	R N	1909
Worcester 10 317—Worcester Co Belmont Hospital	IB Iso	City	125	100		Yes	MD	1890
Worcester City Hospital	Gen	Indep	45	28	16	No	R N	1921
Harvard Private Hospital	Gen	Art	23	10	7	No	R N	1918
Herbert Hall Hospital	N & M	Indep	70	18		No	MD	1882
Joules Pasture Hospital	Gen	Indep	40	13	6	No	R N	1922
Memorial Hospital	Gen	Indep	180	129	30	Yes	MD	1871
St Vincent Hospital	Gen	Church	200	100	30	No	R N	1890
Worcester City Hospital	Gen	City	360	321	40	Yes	MD	1841
Worcester Hahnemann Hos pital	Gen	Indep	105	62	20	No	R N	1890
Worcester State Hospital	N & M	State	2 312	2 268	6	Yes	MD	1887
Wrentham 3 684—Norfolk Co Pondville Hospital	Cancer	State	11	101		Yes	MD	1907
Wrentham State School	Men Def	State	1 290	1 303		No	MD	1900
Related Institutions								
Allerton 800—Plymouth Co Sturges Hospital	Gen	Indiv	14	10	2	No	R N	1912
Sylvester Hospital	Gen	Indiv	11	7	3	No	MD	1890
Amherst 5 888—Hampshire Co Pratt Health Cottage	Inst l	Indep	15	8		No	MD	1896
Rangeview Sanitarium	Conv	Indiv	20	14		No	MD	1900
Andover 0 900—Essex Co Isam Infirmary	Inst l	Indep	36	3		No	Lay	1911
Boston 781 188—Suffolk Co Boston Home for Incurables	Incur	Indep	57	57		No	R N	1887
Convallescent Home of the Boston City Hospital	Conv	City	34	12		No	MD	1890
Deer Island Hospital	Inst l	Oy & Co	20	20		Yes	MD	1861
Detention Hospital	IB	City	43	2	4	No	MD	1909
Dorchester Cottage Hosp	Gen	Indep	12	3	8	No	R N	1899
Dorchester Hospital	Gen	Indiv	12	7	4	No	R N	1924
Last Boston Relief Station of the Boston City Hosp	Lmurg Surg	City Part	12	1		Yes	MD	1908
Eliot Hospital			30	10		No	Lay	1886
Florence Crittenton Home and Hospital	Mater	Indep	24	5	23	No	R N	1900
Haymarket Square Relief Station of the Boston City Hospital	Fmurg	City	29	10		Yes	MD	1907
Home for Jewish Children	Inst l	Indep	6	3		No	Lay	1891
Homestead Rest House	Conv	Indiv	8	5		No	R N	1920
Massachusetts State Prison Hospital	Inst l	State	40	8		Yes	MD	1890
New England Home for Little Wanderers	Inst l	Indep	20	20	6	No	Lay	1860
Prendergast Preventorium	IB	Indep	47	40		No	Lay	1909
Riley Private Hospital	Gen	Indiv	17	12	10	No	Lay	1923
St Lukes Home for Convalescents	Conv	Church	25	15	16	No	R N	1871
Tallitha Oumi Maternity Home and Hospital	Mater	Indep	16	9	16	No	Lay	1846
Washingtonian Home	Alcohol	Indep	50	20		No	MD	1857
Braintree 15 712—Norfolk Co Braintree Cottage Hospital	Mater	Indiv	6	1	6	No	R N	1902
Brookline 47 490—Norfolk Co Bosworth Hospital	Gen	Indiv	20	10		No	Lay	1915
Channing Home	IB	Indep	24	22		No	R N	1897
Cambridge 13 643—Middlesex Co Holy Ghost Hospital for Incurables	Incur	Church	210	210		No	R N	1893
Homberg Mem Infirmary	Inst l	Indep	28	8		Yes	MD	
Stillman Infirmary	Inst l	Indep	68	13		No	MD	
Chelsea 40 816—Suffolk Co Soldiers Home	Inst l	Indep	227	207		Yes	MD	1882
Dracut 6 012—Middlesex Co Blanchard Private Hosp	Mater	Indiv	8	4	6	No	R N	1910

MASSACHUSETTS—Continued

Related Institutions	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Sept M D R N Layman	Year Est
Egypt 340—Plymouth Co	Conv	Indep	70	45		No	R N	1917
Children's Sunlight Hosp	Conv	Indep	70	45		No	R N	1917
Framingham 22 210—Middlesex Co	Inst 1	State	60	18		No	I ay	1877
Reformatory for Women	Conv	Indep	18	10		No	M D	1900
Woodside Cottages								
Haverhill 48 710—Essex Co	Gen	Indiv	10	6	2	No	R N	1918
Benson Ho pital	Gen	Indiv	10	4		No	Lay	1903
Haverhill City Infirmary	Inst 1	City	14	4	6	No	Lay	1923
James I. Mevey Hospital	Gen	Indiv	14	4	6	No	Lay	1923
Holyoke 56 537—Hampden Co	Gen	City	20			No	R N	1918
Carpenter Isolation Hosp	Iso	City	20			No	R N	1918
Holyoke Surgical Hospital	Gen	Part	12	8		No	M D	1900
Lancaster 2 897—Worcester Co	Inst 1	State	19	4		Yes	Lay	1856
Industrial School for Girls	Inst 1	State	19	4		Yes	Lay	1856
Towell 100 234—Middlesex Co	Inst 1	City	135	122		No	Lay	1836
Chelmsford Street Hospital	Inst 1	City	135	122		No	Lay	1836
Malden 58 036—Middlesex Co	Iso	City	40	20		No	R N	1903
Malden Contagious Hosp	Iso	City	40	20		No	R N	1903
Marblehead 8 668—Essex Co	Conv	Indep	94	94		No	Lay	1856
Children's Island Sanit	Conv	Indep	94	94		No	Lay	1856
Medford 59 714—Middlesex Co	Incur	Indiv	15	10		No	Lay	1903
Dearborn Hospital	Gen	Indiv	20	10		No	Lay	1913
Medford Hospital	Gen	Indiv	20	10		No	Lay	1913
Methuen 21 069—Essex Co	Incur	Indep	32	23		No	Lay	1903
Henry O. Nevins Home for Aged and Incurables	Incur	Indep	32	23		No	Lay	1903
Newton 6 276—Middlesex Co	N&M	Indiv	8	7		No	M D	1903
Knollwood Sanitarium	N&M	Indiv	8	7		No	M D	1903
New England Feasbody Home for Crippled Child	Ortho	Indep	115	115		No	R N	1894
Woodlawn Sanitarium	Epil	Indiv	10	9		No	M D	1907
Pittsfield 40 67—Berkshire Co	TB	Indep	14	12		No	R N	1909
Pittsfield Anti-Tuber Assn Hosp and Coolidge Memorial Home	TB	Indep	14	12		No	R N	1909
Quincy 11 985—Norfolk Co	Mater	Indiv	10	6	20	No	Lay	1921
Granite General Hospital	Mater	Indiv	10	6	20	No	Lay	1921
Rutland 2 447—Worcester Co	TB	Indiv	32	23		No	R N	1916
Summit House	TB	Indiv	14	12		No	Lay	1904
Wachusett Cottage	TB	Indiv	14	12		No	Lay	1904
Salem 43 333—Essex Co	Iso	City	60	17		No	R N	1903
Health Dept Hospital for Contagious Diseases	Iso	City	60	17		No	R N	1903
Shirley 2 47—Middlesex Co	Inst 1	State	21	6		Yes	Lay	1909
Industrial School for Boys	Inst 1	State	21	6		Yes	Lay	1909
Somerville 103 908—Middlesex Co	Iso	City	60	9		Yes	R N	1903
City of Somerville Contagious Disease Hospital	Iso	City	60	9		Yes	R N	1903
Springfield 149 900—Hampden Co	Gen	Indiv	23	18		No	Lay	1890
Bu cull's Nursing Home	Gen	Indiv	170	171		No	Lay	1920
Children's Preventorium	TB	Indep	170	171		No	Lay	1920
Swampscott 10 346—Essex Co	Mater	Indep	12	10	16	No	M D	1907
Florence Crittenton Hosp	Mater	Indep	12	10	16	No	M D	1907
Cottage and Hospital	Mater	Indiv	10	4	10	No	R N	1909
Waltham 39 247—Middlesex Co	Mater	Indiv	22	8		No	R N	1900
Terslan Lying In	Mater	Indiv	22	8		No	R N	1900
Waltham Baby Hospital	Chil	Indep	8	4		Yes	M D	1914
Watertown 34 913—Middlesex Co	Gen	Indiv	10	5		No	Lay	1912
Watertown Hospital	Gen	Indiv	10	5		No	Lay	1912
Wellesley 11 439—Norfolk Co	Conv	Indiv	77	57	6	No	Lay	1890
Cedar Lodge	Conv	Indiv	77	57	6	No	Lay	1890
Convalescent Home of the Children's Hospital	Conv	Indep	28	11		Yes	M D	1907
Simpson Infirmary of Wellesley College	Inst 1	Indep	30	6		Yes	Lay	1846
Westboro 6 409—Worcester Co	Inst 1	State	21	4		No	R N	1894
Lymann School Hospital	Inst 1	State	21	4		No	R N	1894
West Concord 1 811—Middlesex Co	Inst 1	State	50	4		No	Lay	1884
West Concord Reformatory	Inst 1	State	50	4		No	Lay	1884
West Concord Hospital	Inst 1	State	50	4		No	Lay	1884
West Rutland 315—Worcester Co	TB	State	40	28		No	Lay	1904
Prison Camp and Hospital	TB	State	40	28		No	Lay	1904
Williamstown 3 900—Berkshire Co	Inst 1	Indep	21	4		No	R N	1894
Williams College Infirmary	Inst 1	Indep	21	4		No	R N	1894
Worcester 19 311—Worcester Co	Conv	Part	17	15		No	R N	1904
Maple Hall Sanitarium	Conv	Part	17	15		No	R N	1904

Summary for Massachusetts

	Number	Beds	Patients	Basinets
Hospitals and sanatoriums	226	49 508	42 703	2 979
Related institutions	67	2 492	1 688	1 3
Totals	293	52 300	43 993	3 092
Refused registration	11	246		63

MICHIGAN

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Sept M D R N Layman	Year Est
Adrian 13 064—Lenawee Co	Gen	City	23	23	10	No	G N	1911
Emma L. Bixby Hospital	Gen	City	16	8		No	Lay	1923
Lenawee Co. Tuber Sanat	TB	County	16	8		No	Lay	1923
Albion 8 394—Calhoun Co	Gen	City	40	18	10	No	R N	1914
James W. Sheldon Memorial Hospital	Gen	City	40	18	10	No	R N	1914
Allegan 3 941—Allegan Co	Gen	Part	14	6		No	R N	1910
Emergency Hospital	Gen	Part	14	6		No	R N	1910

MICHIGAN—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Sept M D R N Layman	Year Est
Alma 6 734—Gratiot Co	Gen	Indiv	20	11	4	Yes	M D	1918
Carney Private Hospital	Gen	Indiv	20	11	4	Yes	M D	1918
Alpena 12 166—Alpena Co	Gen	Indep	24	15	4	No	R N	1916
Donald McRea Hospital	Gen	Indep	24	15	4	No	R N	1916
Ann Arbor 76 944—Washtenaw Co	Gen	Indiv	10	5	4	No	R N	1904
Ann Arbor Private Hosp	Gen	Indiv	10	5	4	No	R N	1904
Cowle Hospital	Gen	Indiv	12	9	1	Yes	R N	1923
Mercywood Sanitarium	N&M	Church	50	20		No	Lay	1924
St. Joseph's Mercy Hosp	Gen	Church	114	114	10	Yes	R N	1900
State Psychopathic Hosp at the Univ of Michigan	Ment	State	62	60		Yes	M D	1906
University Hospital	Gen	State	1 183	1 110	36	Yes	M D	1869
Bad Ave 2 332—Huron Co	Gen	County	28	21	7	No	R N	1906
Hubbard Memorial Hosp	Gen	County	28	21	7	No	R N	1906
Battle Creek 43 573—Calhoun Co	TB	State	400	317		No	Lay	1921
American Legion Hosp	TB	State	400	317		No	Lay	1921
Battle Creek Sanitarium	Gen	Indep	1 000	423	13	Yes	M D	1866
Calhoun County Public Hospital	TB	County	68	60		Yes	M D	1924
Leila Post Montgomery Hospital	Gen	Church	96	77	20	Yes	R N	1927
Nichols Memorial Hosp	Gen	Indep	80	60	15	No	R N	1889
Bay City 4 333—Bay Co	Gen	City	30	14	6	No	R N	1911
Bay City General Hospital	Gen	City	30	14	6	No	R N	1911
Bay City Samaritan Hosp	Gen	Indep	40	24	1	No	M D	1910
Mercy Hospital	Gen	Church	160	72	18	Yes	R N	1899
Belding 4 140—Ionia Co	Gen	City	11	6	4	No	R N	1920
Belding City Hospital	Gen	City	11	6	4	No	R N	1920
Benton Harbor 13 434—Berrien Co	Gen	Indep	40	30	10	No	R N	1897
Benton Harbor Hospital	Gen	Indep	40	30	10	No	R N	1897
Big Rapids 4 671—Mecosta Co	Gen	City	13	10	5	No	R N	1927
Community Hospital	Gen	City	13	10	5	No	R N	1927
Byron Center 3 70—Kent Co	N&M	Indep	275	213		No	M D	1911
Christian Psychopathic Hos	N&M	Indep	275	213		No	M D	1911
Cadillac 9 570—Wexford Co	Gen	Church	33	27	6	No	R N	1908
Mercy Hospital	Gen	Church	33	27	6	No	R N	1908
Wexford County Hospital	Gen	County	23	18		No	R N	1917
Calumet 1 557—Houghton Co	Indus	Indus	23	18		Yes	M D	1867
Calumet and Hecla Hosp	Indus	Indus	23	18		Yes	M D	1867
Camp Custer—Kalamazoo Co	N&M	VetBur	602	600		Yes	M D	1924
U S Veterans Hospital	N&M	VetBur	602	600		Yes	M D	1924
Caro 2 344—Ionia Co	Gen	City	20	9		No	R N	1923
Caro Community Hospital	Gen	City	20	9		No	R N	1923
Caro 1 448—Case Co	Gen	Part	10	6	4	Yes	M D	1920
McCutcheon Hospital	Gen	Part	10	6	4	Yes	M D	1920
Charlevoix 2 247—Charlevoix Co	Gen	City	20	7	7	No	R N	1920
Charlevoix Hospital	Gen	City	20	7	7	No	R N	1920
Coldwater 6 733—Branch Co	Gen	Indiv	23	12	5	No	M D	1922
Wade Memorial Hospital	Gen	Indiv	23	12	5	No	M D	1922
Crystal Falls 2 99—Iron Co	Gen	Indiv	14	5	2	Yes	M D	1901
Crystal Falls General Hosp	Gen	Indiv	14	5	2	Yes	M D	1901
Dearborn 50 338—Wayne Co	N&M	Church	400	350		No	Lay	1860
St. Joseph's Retreat	N&M	Church	400	350		No	Lay	1860
Detroit 1 668 662—Wayne Co	Gen	Indiv	3	2	2	Yes	I ay	1923
Adams Hospital	Gen	Indiv	3	2	2	Yes	I ay	1923
Charles Godwin Jennings Hospital	Gen	Indep	66	New	6	No	R N	1930
Children's Hospital	Chil	Indep	243	219		Yes	R N	1887
City of Detroit Receiving Hospital	Gen	City	630	723	5	Yes	M D	1915
City of Detroit Receiving Hosp (Redford Branch)	Gen	City	43	33		No	R N	1909
Delray Industrial Hosp	Indus	Indus	80	60	15	Yes	I ay	1914
Detroit Eye Ear Nose and Throat Hospital	FFNT	Indiv	170	170		Yes	M D	1911
Detroit Tuber Sanat	TB	Indep	140	141		No	M D	1910
Dunbar Mem Ho p (col)	Gen	Indep	67	71		Yes	M D	1918
East Side Ho pital	Gen	Indiv	36	23	20	No	R N	1912
Evangelical Deaconess Hos pital	Gen	Church	11	9	20	Yes	I ay	1917
Fairview Sanatorium	TB	Indep	31	29		No	M D	1910
Florence Crittenton Hosp	Chil	Indep	10	7	100	Yes	I ay	1911
Grace Ho pital	Gen	Indep	71	23	10	Yes	M D	1885
Harper Hospital	Gen	Indep	60	4	100	Yes	M D	1881
Henry Ford Ho pital	Gen	Indep	718	371	48	Yes	I ay	1911
Herman Kiefer Ho pital	TB	City	110	877	6	Yes	I ay	1900
Jefferson Clinic and Disp	Gen	Indep	60	50	4	Yes	M D	1911
Lincoln Hospital	Gen	Indep	0	11	12	Yes	R N	1911
Michigan Mutual Ho pital	Indus	Indus	23	23		Yes	M D	1916
Miriam Memorial Ho pital	Chil	Indep	1	1		No	M D	1913
Northernwestern Ho pital	Chil	Indep	2	2		No	R N	1917
Providence Ho pital	Chil	Indep	170	100		Yes	I ay	1911
St. Joseph's Mercy Ho pital	Gen	Church	70	60	50	Yes	I ay	1914
St. Mary's Ho pital	Gen	Church	70	60	50	Yes	I ay	1914
U S Marine Ho pital	Gen	U S H S	100	100		Yes	M D	1911
Warren Avenue Diagnostic Ho pital	Gen	Indiv	17	1		Yes	I ay	1911
West Side Sanitarium	N&M	Indiv	20	10		Yes	M D	1911
William Booth Mem Ho pital	Mater	Church	2	2		No	M D	1910
Woman Ho pital	Mater	Indep	200	100		Yes	R N	1910
Downing Ho pital—Calhoun Co	Gen	Church	2	2		Yes	I ay	1911
Lee Sanitarium	Gen	Church	2	2		Yes	I ay	1911
Durand Ho pital—Shiawassee Co	Gen	Ind p	1	1		No	P N	1911
Durand Ho pital	Gen	Ind p	1	1		No	P N	1911
Fenton Rapid Ho pital—Fenton Co	Gen	Ind p	1	1		No	I ay	1911
Harriet Chapman Ho pital	Gen	Ind p	1	1		No	I ay	1911
Holmes Ho pital—Wayne Co	Gen	Ind p	1	1		No	I ay	1911
Holmes Ho pital for Mental Dis	N&M	County	24	24		No	M D	1911
Florence Infirmary	Gen	County	24	24		No	M D	1911
Fennell Ho pital—Delta Co	Gen	Ind p	2	2		No	M D	1911
Living Ho pital	Gen	Church	100	4		No	I ay	1911
St. Francis Ho pital	Gen	Church	100	4		No	I ay	1911

Key to symbols and abbreviations is on page 1023

MICHIGAN—Continued

Hospitals and Sanatorium	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Sept M D R N Layman	Year Est
Flint 156 492—Genesee Co	Gen	City	36	24	50	Yes	I J N	1907
Hurley Hospital**	Gen	Church	41	1	18	No	J N	1921
St Joseph's Hospital	Gen	Church	40	30	24	No	R N	1917
Women's Hospital	Gen	Indep	10	9	5	No	R N	1919
Fremont, 2 157—Newaygo Co	Gen	City	10	9	5	No	R N	1919
Gerber Memorial Hospital	Gen	Indiv	20	18	2	Yes	M D	1916
Goodrich 324—Genesee Co	Gen	Indiv	20	18	2	Yes	M D	1916
Goodrich General Hospital	Gen	Indiv	20	18	2	Yes	M D	1916
Grand Haven 8 345—Ottawa Co	Gen	Indiv	19	10	6	No	R N	1919
Lilzabeth Hutton Memorial Hospital	Gen	Indep	19	10	6	No	R N	1919
Grand Rapids 16 52—Kent Co	Gen	Indep	132	108	18	Yes	M D	1846
Blodgett Mem Hospital**	Gen	Indep	220	164	50	Yes	Lay	1817
Butterworth Hospital**	Gen	City	53	63		No	M D	1223
City General Hospital	Gen	City	53	63		No	M D	1223
Ferguson Droste Ferguson Sanatorium	Proct	Indep	3	16		No	M D	1929
Grand Rapids TB Sanat	TB	City	130	129		Yes	M D	1906
Kent County Detention Hospital	N&M	County	3	1		No	I J N	1907
St Mary's Hospital**	Gen	Church	21	132	3	Yes	R N	1893
Grayling 1972—Crawford Co	Gen	Church	36	20		No	R N	1911
Mersey Hospital	Gen	Church	36	20		No	R N	1911
Greenville 4 10—Montcalm Co	Gen	Indep	15	10	1	No	R N	1900
United Memorial Hospital	Gen	Indep	15	10	1	No	R N	1900
Gros e Pointe 173—Wayne Co	Gen	Indiv	2	12	10	No	Lay	1910
Grosse Pointe Hospital	Gen	Indiv	44	30	13	No	R N	1917
Grosse Pointe Farms (Grosse Pointe P O) 3 67—Wayne Co	Gen	Indep	44	30	13	No	R N	1917
Cottage Hospital	Gen	Indep	44	30	13	No	R N	1917
Hamtramck 50 768—Wayne Co	Gen	City	39	20	6	Yes	R N	1927
Hamtramck Municipal Hos	Gen	City	39	20	6	Yes	R N	1927
Hancock, 5 79—Houghton Co	Gen	Church	54	4	1	No	J N	1895
St Joseph's Hospital	Gen	Church	54	4	1	No	J N	1895
Harbor Beach 1 892—Huron Co	Indus	Indus	20		1	No	Lay	1921
Harbor Beach Hospital	Indus	Indus	20		1	No	Lay	1921
Hart 1 690—Oceana Co	Gen	Indep	20	12	6	No	R N	1924
Oceana Hospital	Gen	Indep	20	12	6	No	R N	1924
Hastings 5 227—Barry Co	Gen	Cy&Co	27	1	8	No	R N	1916
Pennox Hospital	Gen	Cy&Co	27	1	8	No	R N	1916
Highland Park 5 93—Wayne Co	Gen	City	160	176	30	Yes	M D	1920
Highland Park General Hospital**	Gen	City	160	176	30	Yes	M D	1920
Hilldale 5 896—Hilldale Co	Gen	City	18	8	3	No	R N	1921
Hilldale Hospital	Gen	City	18	8	3	No	R N	1921
Holland 14 346—Ottawa Co	Gen	City	49	30	12	Yes	R N	1917
Holland City Hospital	Gen	City	49	30	12	Yes	R N	1917
Houghton 3 757—Houghton Co	Gen	County	5			Yes	M D	1912
Copper Country Sanat	TB	County	5			Yes	M D	1912
Howell 3 61—Livingston Co	Gen	City	20	4	7	No	R N	1928
McPherson Memorial Hosp	Gen	City	20	4	7	No	R N	1928
Michigan State Sanat	TB	State	47	311		No	M D	1900
Hudson 2 361—Lenawee Co	Gen	City	16	7	4	No	Lay	1924
Thorn Memorial Hospital	Gen	City	16	7	4	No	Lay	1924
Ionia 6 562—Ionia Co	Gen	Indiv	18	9	6	No	Lay	1926
Ionia Community Hospital	Gen	Indiv	18	9	6	No	Lay	1926
Ionia State Hospital	N&M	State	712	600		Yes	M D	1880
Iron Mountain 11 652—Dickinson Co	Gen	City	32	18	9	No	R N	1911
Iron Mountain Gen Hosp	Gen	City	32	18	9	No	R N	1911
Iron River 4 66—Iron Co	Indus	Indus	12	5	3	Yes	R N	1901
Iron River Hospital	Indus	Indus	12	5	3	Yes	R N	1901
Lakeside Hospital	Gen	Indiv	15	6		No	M D	1918
Ironwood 14 290—Gorchar Co	Gen	County	100	88	9	Yes	M D	1924
Grand View Hospital	Gen	County	100	88	9	Yes	M D	1924
Newport Hospital	Indus	Indus	13	1	3	No	R N	1913
Twin City Hospital	Gen	Indiv	21	18	3	No	Lay	1890
Ishpeming 9 238—Marquette Co	Indus	Indus	40	30	6	Yes	R N	1872
Ishpeming Hospital	Indus	Indus	40	30	6	Yes	R N	1872
Jackson 55 187—Jackson Co	Gen	City	145	86	50	Yes	M D	1917
W A Foote Mem Hosp**	Gen	City	145	86	50	Yes	M D	1917
Jackson Tuberculosis Hosp	TB	County	54	20		No	R N	1915
Mersey Hospital**	Gen	Church	115	44	30	No	R N	1915
Kalamazoo 64 766—Kalamazoo Co	Gen	Church	300	75	25	No	Lay	1889
Borgess Hospital	Gen	Church	111	81	30	No	Lay	1920
Bronson Methodist Hosp	Gen	Church	135	87		Yes	M D	1913
Fairmount Hospital	TB Iso	County	2 615	2 600		Yes	M D	1893
Kalamazoo State Hosp	N&M	State	2 615	2 600		Yes	M D	1893
Lake Linden 1 714—Houghton Co	Indus	Indus	12	7	2	No	R N	1890
Lake Superior Gen Hosp	Indus	Indus	12	7	2	No	R N	1890
Lakerview 850—Montcalm Co	Gen	Indiv	11	5	2	No	R N	1908
Kelsey Hospital	Gen	Indiv	11	5	2	No	R N	1908
Lansing 78 397—Ingham Co	Gen	Indep	130	84	50	Yes	M D	1912
Edward W Sparrow Hos	TB	County	84	50		Yes	M D	1913
Ingham Sanatorium	Gen	Church	100	80	28	No	Lay	1920
St Lawrence Hospital**	Gen	Church	100	80	28	No	Lay	1920
Lapeer 5 008—Lapeer Co	Gen	Part	15	6	2	No	R N	1924
Lapeer City Hospital	Gen	Part	15	6	2	No	R N	1924
Michigan Home and Train	MenDef	State	3 153	2 996		No	M D	1895
Ing School	MenDef	State	3 153	2 996		No	M D	1895
Laurium 4 916—Houghton Co	Gen	Indep	25	20	5	No	R N	1908
Calumet Memorial Hosp	Gen	Indep	25	20	5	No	R N	1908
Ludington 8 478—Mason Co	Gen	City	22	17	3	No	R N	1906
Paulina Stearns Hospital	Gen	City	22	17	3	No	R N	1906
Manistee 8 678—Manistee Co	Gen	Church	50	25	10	No	R N	1890
Mersey Hospital and Sanit	Gen	Church	50	25	10	No	R N	1890
Manistique 5 198—Schoolcraft Co	Gen	Indiv	12	7	2	No	M D	1927
Shaw Private Hospital	Gen	Indiv	12	7	2	No	M D	1927
Marquette 5 510—Gogebic Co	Indus	Indiv	16	10		No	M D	1918
Charcoal Iron Co Hosp	Indus	Indiv	16	10		No	M D	1918
Marquette 14 769—Marquette Co	TB	County	90	78		Yes	M D	1911
Morgan Heights Sanat	TB	County	90	78		Yes	M D	1911
St Luke's Hospital	Gen	Indep	78	33	8	No	R N	1890
St Mary's Hospital	Gen	Church	70	20	12	No	Lay	1880
Marshall 5 019—Calhoun Co	Gen	Indep	13	7	5	No	R N	1925
Oak Lawn Hospital	Gen	Indep	13	7	5	No	R N	1925

MICHIGAN—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Sept M D R N Layman	Year Est
Menominee 10 720—Menominee Co	Gen	Church	65	47	10	No	R N	1899
St Joseph's Hospital	Gen	Church	65	47	10	No	R N	1899
Mohawk 1 031—Benewah Co	Indus	Indus	20	8	2	No	M D	1900
Mohawk Mine Hospital	Indus	Indus	20	8	2	No	M D	1900
Monroe 18 110—Monroe Co	Gen	Church	60	21	12	No	R N	1923
Mersey Hospital	Gen	Church	60	21	12	No	R N	1923
Monroe Hospital	Gen	Indep	60	21	12	No	R N	1923
Mt Clemens 13 497—Macomb Co	Gen	Indiv	21	15	4	No	Lay	1917
Crane Sanit and Hospital	Gen	Indiv	21	15	4	No	Lay	1917
St Joseph's Hospital and Sanitarium	Gen	Church	150	73	10	No	Lay	1899
Signa Camma Conv Home for Crippled Children	Ortho	Indep	50	43		Yes	R N	1920
Station Hospital	Gen	Army	30	18		Yes	M D	1920
Mt Pleasant 5 211—Isabella Co	Gen	Indiv	10	7	2	Yes	R N	1914
Brondstetters Private Hosp	Gen	Indiv	10	7	2	Yes	R N	1914
Munising 1 966—Alger Co	Gen	Indep	18	14	3	No	R N	1910
Munising Hospital	Gen	Indep	18	14	3	No	R N	1910
Muskogee 41 390—Muskogee Co	Gen	Indep	108	71	17	No	R N	1904
Hackley Hospital**	Gen	Indep	108	71	17	No	R N	1904
Mersey Hospital**	Gen	Church	12	77	2	Yes	R N	1903
Muskegon County Tubercu	TB	County	70	65		Yes	M D	1924
Isola Sanatorium	TB	County	70	65		Yes	M D	1924
Nahma 710—Delta Co	Indus	Indiv	11	6		No	M D	1914
Bay View Hospital	Indus	Indiv	11	6		No	M D	1914
Negaunee 1 2—Marquette Co	Gen	Indiv	20	5	3	Yes	M D	1910
Dr Robbins Hospital	Gen	Indiv	20	5	3	Yes	M D	1910
Twin City Hospital	Indus	Part	15	12	3	No	M D	1923
Newberry 2 40—Iscia Co	N&M	State	1 172	1 141		Yes	M D	1890
Newberry State Hospital**	N&M	State	1 172	1 141		Yes	M D	1890
Perry Spinks Hospital	Gen	Part	14	10	5	No	M D	1920
Niles 11 120—Berrien Co	Gen	Indep	35	22	9	Yes	R N	1906
Pawating Hospital	Gen	Indep	35	22	9	Yes	R N	1906
Northville 2 666—Wayne Co	TB	Indiv	85	76		No	R N	1920
Fast Lawn Sanatorium	TB	Indiv	85	76		No	R N	1920
Win H Maybury Sanat	TB	City	64	634		No	M D	1922
Norway 4 016—Dickinson Co	Indus	Indus	14	7	5	No	R N	1917
Penn Iron Mining Com	Indus	Indus	14	7	5	No	R N	1917
pany Hospital	Indus	Indus	14	7	5	No	R N	1917
Omer 216—Arenac Co	Gen	Indiv	10	7	4	No	M D	1920
Smith Hospital	Gen	Indiv	10	7	4	No	M D	1920
Ontonagon 1 937—Ontonagon Co	TB	County	12	9		No	Lay	1917
Bon Air Sanatorium	TB	County	12	9		No	Lay	1917
Ontonagon Hospital	Gen	Indiv	12	9		No	R N	1919
Oshkosh 17—Kalamazoo Co	TB	Indep	67	65		No	M D	1919
Pine Crest Sanatorium	TB	Indep	67	65		No	M D	1919
Owosso 14 396—Shiawassee Co	Gen	Indep	90	67	10	Yes	M D	1919
Memorial Hospital	Gen	Indep	90	67	10	Yes	M D	1919
Petoskey 5 740—J mmet Co	Gen	City	27	20	6	No	R N	1901
Lockwood Hospital and	Gen	Indep	40	25	6	Yes	R N	1909
Deaconess Home	Gen	City	27	20	6	No	R N	1901
Petoskey Hospital	Gen	Indep	40	25	6	Yes	R N	1909
Pinekey 433—Livingston Co	Gen	Indiv	10	6	1	No	M D	1903
Pinekey Sanatorium	Gen	Indiv	10	6	1	No	M D	1903
Plainwell 2 270—Allegan Co	Gen	City	17	9	7	No	R N	1927
William Cripe Hospital	Gen	City	17	9	7	No	R N	1927
Pompeii 310—Gratiot Co	Gen	Indiv	15	9		No	Lay	1911
Pompeii Hospital	Gen	Indiv	15	9		No	Lay	1911
Pontiac 4 025—Oakland Co	Gen	County	85	50		No	Lay	1918
Oakland Co Contag Hosp	TB	County	170	160		No	M D	1922
Oakland Co Tuberc Sanat	TB	County	170	160		No	M D	1922
Pontiac City Hospital	Gen	City	85	50	17	No	Lay	1910
Pontiac State Hospital	N&M	State	1 763	1 692		Yes	M D	1883
St Joseph's Mercy Hosp	Gen	Church	100	70	2	Yes	R N	1907
Pt Huron 11 361—St Clair Co	Gen	Indep	50	4	10	No	R N	1901
Pt Huron Hospital	Gen	Indep	50	4	10	No	R N	1901
Powers 370—Menominee Co	TB	County	100	86		Yes	M D	1921
Pinecrest Sanatorium	TB	County	100	86		Yes	M D	1921
Reed City 1 792—Oscoda Co	Gen	City	10	3	3	No	R N	1919
Reed City Hospital	Gen	City	10	3	3	No	R N	1919
Royal Oak 22 904—Oakland Co	Gen	Indiv	12	10	4	No	M D	1920
Royal Oak Private Hosp	Gen	Indiv	12	10	4	No	M D	1920
Saginaw 80 715—Saginaw Co	Gen	City	24	18	1	No	R N	1906
Saginaw City Hospital	Gen	City	24	18	1	No	R N	1906
Saginaw Co Tuberc Hosp	TB	County	27	25		No	R N	1906
Saginaw General Hosp **	Gen	Indep	113	85	23	Yes	Lay	1887
St Mary's Hospital**	Gen	Church	166	79	20	No	R N	1874
Woman's Hospital	Gen	Indep	50	21	12	No	R N	1883
St Clair 3 890—St Clair Co	Gen	City	12	6	5	No	R N	1807
St Clair Community Hosp	Gen	City	12	6	5	No	R N	1807
St Johns 3 929—Clinton Co	Gen	Indep	80	14	10	No	R N	1927
Clinton Memorial Hospital	Gen	Indep	80	14	10	No	R N	1927
St Joseph 8 349—Berrien Co	Gen	Indep	32	10	3	No	M D	1915
St Joseph Sanitarium	Gen	Indep	32	10	3	No	M D	1915
Sault Ste Marie 13 755—Chippewa Co	Gen	County	61	50	8	No	R N	1924
Chippewa County War Ve	Gen	County	61	50	8	No	R N	1924
morial Hospital	Gen	Army	12	7		Yes	M D	1870
Station Hospital	Gen	Army	12	7		Yes	M D	1870
Shelby 1 152—Oceana Co	Gen	Indep	10	3	4	No	R N	1901
Shelby Community Hosp	Gen	Indep	10	3	4	No	R N	1901
South Haven 1 804—Van Buren Co	Gen	City	30	12	6	No	R N	1908
City Hospital	Gen	City	30	12	6	No	R N	1908
Penoyar Memorial Hosp	Gen	Part	12	10	6	No	R N	1930
Sterling 279—Arenac Co	Gen	Indiv	12	8	4	Yes	R N	1910
Sterling Hospital	Gen	Indiv	12	8	4	Yes	R N	1910
Sturgis 6 900—St Joseph Co	Gen	City	41	10	2	Yes	R N	1909
Sturgis Memorial Hospital	Gen	City	41	10	2	Yes	R N	1909
Three Rivers 6 863—St Joseph Co	Gen	City	30	12	6	No	R N	1923
Three Rivers Hospital	Gen	City	30	12	6	No	R N	1923
Traverse City 1 380—Grand Traverse Co	Gen	State	56	29	11	Yes	M D	1922
Isa Decker Munson Hosp	N&M	State	2 087	2 078		Yes	M D	1885
Traverse City State Hos	N&M	State	2 087	2 078		Yes	M D	1885
Trimountain 2 411—Houghton Co	Indus	Indus	25	10	2	Yes	R N	1906
Copper Range Hospital	Indus	Indus	25	10	2	Yes	R N	1906

MICHIGAN—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinsets	Outpatient Dept	Supt M D R N Layman	Year Est
Wahjamega—Tuscola Co								
Michigan Farm Colony for Epileptics	Epilep	State	831	760	No	MD	1914	
Wakeland 3677—Gogebic Co								
Wakeland General Hospital	Indus	Indus	11	4	5	No	RN	1926
Wyandotte 28368—Wayne Co								
Wyandotte General Hosp	Gen	City	60	42	10	Yes	RN	1926
Ypsilanti 10143—Washtenaw Co								
Beyer Memorial Hospital	Gen	City	35	21	6	No	RN	1918
Hull Memorial City Hospital (Included in Beyer Memorial Hospital)								
Leland After Cure Farm and Sanatorium	TB	Indep	100	95	No	MD	1926	
Zeeland 2830—Ottawa Co								
Thomas G Hulzinga Memorial Hospital	Gen	Cy&Co	14	3	4	No	RN	1928

Related Institutions

Addison 402—Lunawee Co	Gen	Indiv	6	2	2	No	MD	1921
Addison Community Hosp								
Alma 6734—Gratiot Co								
Michigan Masonic Home & Hospital	Inst l	Frat	70	17		Yes	Lay	1911
Brighton 1287—Ivinston Co								
Mellus Hospital	Gen	Indiv	15	8	4	No	MD	1921
Caspian 1588—Iron Co								
Verona Welfare Hospital	Indus	Indus	10	4		No	MD	1915
Charlotte 5307—Iaton Co								
Community Ho pital	Gen	Indiv	10	1	2	No	Lay	1920
Coldwater, 673—Branch Co								
Branch County Infirmary and Hospital	Inst l	County	50	40		No	Lay	1860
State Public School	Chll	State	0	8		No	Lay	1860
Detroit 1568 662—Wayne Co								
Boulevard Home Hospital	Conv	Indiv	20	10	2	No	MD	1927
Fenwood Hospital	Gen	Indiv	7	4	5	No	MD	1921
Memorial Hospital	Sk & Ca	Indiv	6	1		No	MD	1913
Pennsylvania Ave Sanit	Gen	Indiv	10	0		No	Lay	1900
Protestant Orphan Asylum	Inst l	Indep	12	2		No	Lay	1836
East Lansing 4389—Ingham Co								
Hospital of Michigan State College of Agriculture and Applied Science	Inst l	State	30	10		Yes	R N	1910
Farmington, 1243—Oakland Co								
Children's Hosp of Michigan Convalescent Home	Conv	Indep	200	222		No	R N	1918
Flint 156 492—Genesee Co								
Fisher Body Hosp Units 1 and 2	Indus	Indus	6	4		Yes	MD	1917
Genesee County Infirmary	Inst l	County	10	7		No	Lay	1913
Michigan School for the Deaf	Inst l	State	36	5		No	Lay	1802
Grand Rapids 168 592—Kent Co								
M J Olark Mem Home	Inst l	Church	10	12		Yes	Lay	1906
Holland Union Benevolent Home	Inst l	Indep	11	6		Yes	Lay	1897
Michigan Soldiers Home Hospital	Inst l	State	200	130		No	MD	1884
Municipal Isolation Hosp	Iso	City	30	3		No	MD	1901
Salvation Army Frangeline Booth Home and Hosp	Mater	Church	20	6	6	No	Lay	1897
Harrisville 438—Alcona Co								
Dr A R Miller's Private Hospital	Gen	Indiv	6	1		Yes	R N	1919
Highland Park 59 979—Wayne Co	Co							
Sheppard Sanitarium	Conv	Indiv	15	0	1	No	MD	1920
Ionia 6562—Ionia Co								
Michigan State Reformatory	Inst l	State	60	58		No	MD	1871
Iron Mountain 11 652—Dickinson Co								
Ford Motor Company Industrial Hospital	Indus	Indus	6	2		Yes	MD	1920
Jackson 50 187—Jackson Co								
Jackson County Contagious Hospital	Iso	Cy & Co	30	8		No	Lay	1886
Michigan Odd Fellows Home	Inst l	Frat	6	3		No	Lay	1904
Michigan State Prison Hospital	Inst l	State	150	70		Yes	MD	1803
Lansing 78397—Ingham Co								
Boys Vocational School	Inst'l	State	40	10		No	Lay	1852
Lansing City Hospital	Iso	City	60	15		No	R N	1921
Manistique 5108—Schoolcraft Co								
Manistique Hospital	Gen	Indiv	12	5	4	No	R N	1928
Marquette 14 789—Marquette Co								
Ho p of the State House of Correction	Inst l	State	24	8		Yes	MD	1901
Morenel 1773—Lenaawee Co								
Hal C Blair Hospital	Surg	Part	5	1		No	MD	1903
Mt Pleasant 5211—Isabella Co								
Mt Pleasant Indian School Hospital	Inst l	Indian	31	14		No	Lay	1800
Northville 2566—Wayne Co								
Wayne County Training School	Inst l	County	40	0		Yes	MD	1920
Pontiac 64928—Oakland Co								
Oakland County Infirmary	Inst l	County	76	40		No	Lay	1800
Pt Huron 31361—St Clair Co								
Pt Huron Emerg Hosp	Iso	City	20	6		No	R N	1923
Rogers City 3278—Presque Isle Co								
Rogers City Hospital	Gen	Indiv	6	3		No	MD	1800
Romeo 2283—Macomb Co								
Romeo Private Hospital	Gen	Indiv	10	0	4	No	R N	1920
Royal Oak 22 904—Oakland Co								
Oakland Maternity Hosp	Mater	Indiv	10	4	6	No	R N	1920

MICHIGAN—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinsets	Outpatient Dept	Supt M D R N Layman	Year Est
Sandusky 1300—Sanilac Co								
Tweddie Hospital	Gen	Part	6	4	1	No	MD	1924
Unionville 478—Tuscola Co								
Unionville General Hosp	Gen	Indiv	8	4	2	No	MD	1915
West Branch 1164—Ogemaw Co								
Tolfree Memorial Hospital	Gen	City	10	4	3	No	RN	1920
Summary for Michigan	Number		Beds		Patients		Basinsets	
Hospitals and sanatoriums	199		36 915		30 149		1 94	
Related Institutions	42		2 092		1 340		49	
Totals	241		39 007		31 998		2 093	
Refused registration	17		577				79	

MINNESOTA

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinsets	Outpatient Dept	Supt M D R N Layman	Year Est
Ada 1280—Norman Co								
Norman Co Mem Hosp	Gen	Indep	10	4	3	No	RN	1920
Ah gwaiching 4—Cass Co								
Minnesota State Sanat	TB	State	310	221	No	MD	1907	
Albert Lea 10169—Freeborn Co								
City and County Hosp	Gen	Cy&Co	70	42	10	No	RN	1909
Alexandria 3876—Douglas Co								
Douglas County Hospital	Gen	Indep	30	10	4	No	MD	1927
St Luke's Hospital	Gen	Indiv	16	7	0	No	RN	1898
Anoka 4801—Anoka Co								
Anoka State Asylum	N&M	State	1060	1030	No	MD	1900	
Gates Hospital	Gen	Indiv	11	5	6	No	MD	1923
Appleton 162—Swift Co								
Kaufman Hospital	Gen	Indiv	24	9	3	No	MD	1918
Austin 12276—Mower Co								
St Olaf Lutheran Hosp	Gen	Church	50	43	11	No	RN	1890
Bagley 98—Clearwater Co								
Clearwater Hospital	Gen	Indiv	12	5	2	No	RN	1928
Barrett 368—Grant Co								
Powers Hospital	Gen	Indiv	10	4	No	RN	1910	
Battle Lake 302—Otter Tail Co								
Otter Tail County Sanat	TB	County	40	40	No	MD	1912	
Bemidji 7202—Beltrami Co								
Lutheran Hospital	Gen	Indep	20	12	No	RN	1927	
Benson 2090—Swift Co								
Swift County Hospital	Gen	Indep	18	10	No	RN	1919	
Biwabik 1343—St Louis Co								
Biwabik Hospital	Gen	Indiv	10	4	3	No	MD	1892
Blue Earth 2884—Faribault Co								
Blue Earth Hospital	Gen	Indiv	10	4	4	No	MD	1910
Braham 509—Isanti Co								
Braham Hospital	Gen	Indiv	12	8	4	No	RN	1906
Brainerd 10221—Crow Wing Co								
St Joseph's Hospital	Gen	Church	70	74	15	No	Lay	1900
Breckridge 2264—Wilkin Co								
St Francis Hospital	Gen	Church	50	30	8	No	Lay	1898
Buffalo 1409—Wright Co								
Catin Hospital	Gen	Indiv	12	6	2	No	Lay	1919
Buhl 1634—St Louis Co								
Shaw Hospital	Gen	Indiv	26	12	6	Yes	MD	1901
Caledonia 154—Houston Co								
Caledonia Hospital	Gen	Indiv	10	8	8	No	MD	1901
Cambridge 118—Isanti Co								
Minnesota Colony for Epileptics	Epilep	State	400	22	No	MD	1920	
Canby 1738—Yellow Medicine Co								
John Swenson Mem Ho p	Gen	City	20	8	5	No	RN	1914
Cannon Falls 108—Coodhue Co								
Mineral Springs Sanat	TB	County	100	40	No	MD	1910	
Chi hola 80—St Louis Co								
Rood Ho pital	Gen	Indiv	17	5	0	Yes	MD	1900
Cloquet 682—Carlton Co								
Cloquet Ho pital	Gen	Part	11	4	3	No	RN	1890
Condou du Lac Indian Ho p	Gen	Indian	0	17	4	No	MD	1910
Raiter Hospital	Gen	Part	70	14	6	No	MD	1900
Cokato 117—Wright Co								
Cokato Ho pital	Gen	Indiv	10	8	3	No	RN	1913
Crookston 601—Polk Co								
Bethel Ho pital	Gen	Church	40	0	0	No	RN	1890
St Vincent's Hospital	Gen	Church	44	0	6	No	Lay	1900
Sunnyside Sanatorium	TB	County	60	0	0	Yes	MD	1910
Crosby 41—Crow Wing Co								
Miners Hospital	Gen	Indiv	20	10	0	Yes	RN	1913
Dawson 1704—Lake of the Isles Co								
Daw on Surgical Hospital	Gen	Ind p	20	14	No	RN	1914	
Deerwood —Crow Wing Co								
Deerwood Sanatorium	TB	County	0	0	0	Yes	MD	1911
Detroit Lake 71—Becker Co								
Community Ho pital	Gen	Indep	10	11	6	No	RN	1910
Duluth 1014—St Louis Co								
Duluth Ho pital	Gen	Indiv	20	0	8	No	RN	1900
St Luke's Ho pital	Gen	Ind p	20	10	3	Yes	Lay	1910
St Mary's Ho pital	Gen	Church	20	1	1	Yes	Lay	1910
Webster Ho pital	Gen	Indiv	40	1	12	Yes	MD	1910
Ellsworth 614—Notre Dame Co								
Ellsworth Ho pital	Gen	Indiv	10	4	0	Yes	MD	1910
Flv 114—St Louis Co								
Shipman Ho pital	Gen	Part	1	6	4	Yes	MD	1910
Freeth 744—St Louis Co								
More Ho pital	Gen	Indiv	20	1	0	Yes	Lay	1910
Fairmont —Martin Co								
Fairmont Ho pital	Gen	Part	12	0	4	No	MD	1910

Key to symbols and abbreviations is on page 1023

MINNESOTA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Sup't M.D.	R.N. Layman	Year Est
Faribault 12767—Rice Co	FeMl	State	2100	2003	No	M D	1850		
Minnesota School for Feeble-minded	Gen	Church	53	38	14	No	Lay	1908	
St. Lucas Deaconess Hospital	Gen	Indiv	20	10	3	No	R N	1915	
Farmington 1342—Dakota Co	N&M	State	1760	1685	No	M D	1880		
Community Clinic	Gen	City	58	25	12	No	Lay	1900	
Fergus Falls 9389—Otter Tail Co	Gen	Church	70	32	9	No	R N	1903	
Fergus Falls State Hospital	Gen	City	58	25	12	No	Lay	1900	
Ceo B Wright Memorial Hospital	Gen	Church	70	32	9	No	R N	1903	
St. Luke's Hospital	Gen	City	58	25	12	No	Lay	1900	
St. Pauling—Hennepin Co	Gen	City	58	25	12	No	Lay	1900	
Station Hospital	Gen	City	58	25	12	No	Lay	1900	
U S Vet Hospital No 106	Gen	City	58	25	12	No	Lay	1900	
Fosston 908—Polk Co	Gen	City	58	25	12	No	Lay	1900	
Fosston Hospital	Gen	City	58	25	12	No	Lay	1900	
Graceville 969—Big Stone Co	Gen	City	58	25	12	No	Lay	1900	
Western Minnesota Hospo	Gen	City	58	25	12	No	Lay	1900	
Grand Rapids 3206—Itasca Co	Gen	City	58	25	12	No	Lay	1900	
Itasca County Hospital	Gen	City	58	25	12	No	Lay	1900	
Granite Falls 1791—Yellow Medicine Co	Gen	City	58	25	12	No	Lay	1900	
Granite Falls Hospital	Gen	City	58	25	12	No	Lay	1900	
Riverside Sanatorium	Gen	City	58	25	12	No	Lay	1900	
Grygla 14—Marshall Co	Gen	City	58	25	12	No	Lay	1900	
Grygla Community Hosp	Gen	City	58	25	12	No	Lay	1900	
Hallock 869—Kittson Co	Gen	City	58	25	12	No	Lay	1900	
Kittson War Veterans Memorial Hospital	Gen	City	58	25	12	No	Lay	1900	
Hastings 5086—Dakota Co	Gen	City	58	25	12	No	Lay	1900	
Hastings State Asylum	Gen	City	58	25	12	No	Lay	1900	
Tatto Hospital	Gen	City	58	25	12	No	Lay	1900	
St. Raphael Hospital	Gen	City	58	25	12	No	Lay	1900	
Hendricks 402—Lincoln Co	Gen	City	58	25	12	No	Lay	1900	
Hendricks Hospital	Gen	City	58	25	12	No	Lay	1900	
Heron Lake 786—Jackson Co	Gen	City	58	25	12	No	Lay	1900	
Southwestern Minnesota Hospital	Gen	City	58	25	12	No	Lay	1900	
Hibbing 15666—St. Louis Co	Gen	City	58	25	12	No	Lay	1900	
Adams Hospital	Gen	City	58	25	12	No	Lay	1900	
Rood Hospital	Gen	City	58	25	12	No	Lay	1900	
Hutchinson 3406—McLeod Co	Gen	City	58	25	12	No	Lay	1900	
Hutchinson Community Hospital	Gen	City	58	25	12	No	Lay	1900	
International Falls 5036—Koochiching Co	Gen	City	58	25	12	No	Lay	1900	
Craig Hospital	Gen	City	58	25	12	No	Lay	1900	
Northern Minnesota Hosp	Gen	City	58	25	12	No	Lay	1900	
Jackson 2206—Jackson Co	Gen	City	58	25	12	No	Lay	1900	
Halloran Hospital	Gen	City	58	25	12	No	Lay	1900	
Lake City 3210—Wabasha Co	Gen	City	58	25	12	No	Lay	1900	
Lake City Hospital	Gen	City	58	25	12	No	Lay	1900	
Lake Park 624—Breck Co	Gen	City	58	25	12	No	Lay	1900	
Sand Beach Sanatorium	Gen	City	58	25	12	No	Lay	1900	
Litchfield 2880—Meeker Co	Gen	City	58	25	12	No	Lay	1900	
Litchfield Hospital	Gen	City	58	25	12	No	Lay	1900	
Little Falls 5014—Morrison Co	Gen	City	58	25	12	No	Lay	1900	
St. Gabriel's Hospital	Gen	City	58	25	12	No	Lay	1900	
Long Prairie 1854—Todd Co	Gen	City	58	25	12	No	Lay	1900	
Long Prairie Hospital	Gen	City	58	25	12	No	Lay	1900	
Lyerne 2644—Rock Co	Gen	City	58	25	12	No	Lay	1900	
Lyerne Hospital	Gen	City	58	25	12	No	Lay	1900	
Madella 1377—Watonwan Co	Gen	City	58	25	12	No	Lay	1900	
Madella Hospital	Gen	City	58	25	12	No	Lay	1900	
Madison 1916—Lac qui Parle Co	Gen	City	58	25	12	No	Lay	1900	
Ebenezer Hospital	Gen	City	58	25	12	No	Lay	1900	
Mankato 14038—Blue Earth Co	Gen	City	58	25	12	No	Lay	1900	
Immanuel Hospital	Gen	City	58	25	12	No	Lay	1900	
St. Joseph's Hospital	Gen	City	58	25	12	No	Lay	1900	
Marshall 720—Iron Co	Gen	City	58	25	12	No	Lay	1900	
Marshall Hospital	Gen	City	58	25	12	No	Lay	1900	
Melrose 1801—Stearns Co	Gen	City	58	25	12	No	Lay	1900	
Melrose Hospital	Gen	City	58	25	12	No	Lay	1900	
Minneapolis 46136—Hennepin Co	Gen	City	58	25	12	No	Lay	1900	
Abbott Hospital	Gen	City	58	25	12	No	Lay	1900	
Asbury Hospital	Gen	City	58	25	12	No	Lay	1900	
Fiel Hospital	Gen	City	58	25	12	No	Lay	1900	
Fairview Hospital	Gen	City	58	25	12	No	Lay	1900	
Harriet Walker Hospital	Gen	City	58	25	12	No	Lay	1900	
Hill Crest Surgical Hosp	Gen	City	58	25	12	No	Lay	1900	
Lutheran Deaconess Home and Hospital	Gen	City	58	25	12	No	Lay	1900	
Maternity Hospital	Gen	City	58	25	12	No	Lay	1900	
Minneapolis Gen Hosp	Gen	City	58	25	12	No	Lay	1900	
Minneapolis Sanitarium	Gen	City	58	25	12	No	Lay	1900	
Minnesota Sanitarium	Gen	City	58	25	12	No	Lay	1900	
Northwestern Hospital	Gen	City	58	25	12	No	Lay	1900	
St. Andrew's Hospital	Gen	City	58	25	12	No	Lay	1900	
St. Barnabas Hospital	Gen	City	58	25	12	No	Lay	1900	
St. Mary's Hospital	Gen	City	58	25	12	No	Lay	1900	
Shriners Hospital for Crippled Children	Gen	City	58	25	12	No	Lay	1900	
Swedish Hospital	Gen	City	58	25	12	No	Lay	1900	
University Hospital	Gen	City	58	25	12	No	Lay	1900	
Montevideo 4019—Chippewa Co	Gen	City	58	25	12	No	Lay	1900	
Montevideo Hospital	Gen	City	58	25	12	No	Lay	1900	
Moorhead 7631—Clay Co	Gen	City	58	25	12	No	Lay	1900	
St. Ansgar's Hospital	Gen	City	58	25	12	No	Lay	1900	
Moore Lake 742—Carlton Co	Gen	City	58	25	12	No	Lay	1900	
Moore Lake Community Hospital	Gen	City	58	25	12	No	Lay	1900	
Morris 274—Stevens Co	Gen	City	58	25	12	No	Lay	1900	
Morris Hospital	Gen	City	58	25	12	No	Lay	1900	
Mountain Lake 1288—Cottonwood Co	Gen	City	58	25	12	No	Lay	1900	
Bethel Deaconess Hospital	Gen	City	58	25	12	No	Lay	1900	

MINNESOTA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Sup't M.D.	R.N. Layman	Year Est
New Prague 143—J. C. Sauer Co									
New Prague Community Hospital	Gen	Indep	22	11	3	No	R N		1914
New Ulm 7308—Brown Co									
Loretto Hospital	Gen	Church	45	25	8	No	Lay		1833
Union Hospital	Gen	Indep	50	22	0	No	R N		1914
Neopimus 12—St. Louis Co									
Neopimus Sanatorium	TB	County	200	200		Yes	M D		1911
Northfield 415—Rice Co									
Northfield Hospital	Gen	Indep	12	4	4	No	R N		1910
Oak Terrace—Hennepin Co									
Glen Lake Sanatorium	TB	County	700	653	4	Yes	M D		1916
Onigum 19—Cass Co									
Chippewa Tubercular Sanatorium and General Hosp	TB Gen	Indian	90	66	2	Yes	M D		1914
Ortonville 2017—Big Stone Co									
Ortonville Evangelical Hospital	Gen	Church	18	10	5	No	R N		1906
Owatonna 7041—Steele Co									
Owatonna City Hospital	Gen	City	25	16	6	No	R N		1900
Parkers Prairie 631—Otter Tail Co									
Ishhold Hospital	Surg	Indiv	12	4	No	M D			1910
Paynesville 1121—Stearns Co									
Paynesville Hospital	Gen	Indiv	12	8	2	No	M D		1893
Perham 1411—Otter Tail Co									
St. James Hospital	Gen	Church	40	10	7	No	R N		1907
Pipestone 348—Pipestone Co									
Ashton Memorial Hospital	Gen	City & Co	47	17	4	No	R N		1923
Pokema—Pine Co									
Pokema Sanatorium	TB	Indep	58	33		No	M D		1905
Princeton 1636—Mille Lacs Co									
Northwestern Hospital	Gen	Indep	30	15	4	Yes	Lay		1900
Pupons 63—Beltrami Co									
Lake Julia Tuberc Sanat	TB	County	50	50		No	M D		1910
Redlake 214—Beltrami Co									
Red Lake Indian Hospital		Indian	28	20	3	Yes	Lay		1916
Red Wing 9629—Goodhue Co									
Red Wing Hospital	Gen	City	30	22	6	No	R N		1891
St. John's Hospital	Gen	Indep	70	47	10	No	Lay		1903
Redwood Falls 253—Redwood Co									
Redwood Falls Hospital	Gen	Part	15	6	4	No	R N		1910
Richmond 603—Stearns Co									
Richmond Hospital	Gen	Indep	10	6	1	No	M D		1919
Rochester 20621—Olmsted Co									
Colonial Hospital	Gen	Indep	248	220		Yes	Lay		1910
Kahler Hospital	Gen	Indep	150	122		Yes	Lay		1922
Rochester State Hospital	N & M	State	1,576	1,406	2	No	M D		1850
St. Mary's Hospital	Gen	Church	623	400	24	No	R N		1880
Worral Hospital and Annex	Sk & O & F & N	Indep	190	137		Yes	Lay		1918
Roseau 1028—Roseau Co									
Roseau Hospital	Gen	Indiv	15	6	No	Lay			1915
St. Cloud 21000—Stearns Co									
St. Cloud Hospital	Gen	Church	181	94	30	No	Lay		1880
U S Vet Hosp No 101	N & M	Vet Bur	530	500		No	M D		1914
St. Paul 21606—Ramsey Co									
Ancker Hospital	Gen	City & Co	1000	602	50	Yes	M D		1871
Bethesda Hospital	Gen	Church	110	70	14	No	Lay		1880
Charles T. Miller Hosp	Gen	Indep	100	118	21	Yes	M D		1900
Children's Hospital	Chil	Indep	70	37		No	R N		1923
Gillette State Hospital for Crippled Children									
Crippled Children	Ortho	State	200	227		Yes	Lay		1897
Midway Hospital	Gen	Church	103	78	20	Yes	R N		1910
Mounds Park Sanit	Gen	Church	120	105	12	No	R N		1907
Northern Pacific Beneficial Association Hospital									
St. John's Hospital	Gen	Indep	150	103	12	Yes	M D		1881
St. Joseph's Hospital	Gen	Church	70	52	15	No	R N		1911
St. Luke's Hospital	Gen	Church	246	116	24	No	R N		1884
St. Paul Hospital	Gen	Church	100	79	25	No	R N		1880
St. Paul Hospital	Gen	Church	89	39	21	Yes	Lay		1892
West Side General Hosp	Gen	Church	65	30	15	No	Lay		1913
St. Peter 4811—Nicollet Co									
Covell Hospital	Gen	Indiv	20	10	8	No	M D		1927
St. Peter State Hospital	N & M	State	1911	1,708		No	M D		1868
Slayton 1102—Murray Co									
Home Hospital	Gen	Part	20	17	8	Yes	M D		1914
Springfield 2049—Brown Co									
St. John's Hospital	Gen	Church	20	8	6	No	Lay		1901
Spring Grove 867—Houston Co									
Spring Grove Hospital	Gen	Indep	14	8	6	No	R N		1916
Starbuck 781—Pope Co									
Minnesota Hospital	Gen	Indep	15	9	5	No	Lay		1911
Stillwater 7173—Washington Co									
Lakeview Memorial Hosp	Gen	City & Co	50	19	6	No	R N		1880
Thief River Falls 4268—Pennington Co									
Oakland Park Sanatorium	TB	County	59	57		Yes	M D		1917
Physicians Hospital	Gen	Indep	20	10	5	No	R N		1915
Tracey 2570—Iyon Co									
Chloe Hospital	Gen	Part	19	6	4	No	R N		1927
Tracey Hospital	Gen	Indiv	14	8	4	No	R N		1916
Two Harbors 442—Iake Co									
Burns & Christensen Hosp	Gen	Part	42	19		No	M D		1910
Tyler 905—Lincoln Co									
Tyler Hospital	Gen	Indep	18	11	5	No	R N		1910
Virginia 11963—St. Louis Co									
Lenont Hospital	Gen	Indiv	12	8	4	No	M D		1901
Virginia General Hospital	Gen	Indiv	18	6	5	Yes	M D		1912
Wabasha 212—Wabasha Co									
Buena Vista Sanatorium	TB	County	26	22		No	M D		1917
St. Elizabeth's Hospital	Gen	Church	45	20	6	No	Lay		1898
Wadena 2512—Wadena Co									
Wadena 2512—Wadena Co									
Fair Oaks Lodge Sanat	TB	County	33	30		Yes	Lay		1918
Wesley Hospital	Gen	Church	45	23	5	No	R N		1920
Walker 618—Cass Co									
Walker Hospital	Gen	Indiv	30	20	6	No	M D		1900

MINNESOTA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt. M.D. R.N. Layman	Year Est
Warren 1472—Marshall Co								
Warren Hospital	Gen	Church	25	11	5	No	R N	1900
Waseca 3815—Waseca Co								
Waseca Memorial Hospital	Gen	City	25	10	8	No	R N	1922
Wheaton 1240—Traverse Co								
Wheaton Hospital	Gen	Indiv	12	6	2	No	M D	1912
White Earth 416—Becker Co								
White Earth Indian Hosp	Gen	Indian	20	17	2	Yes	Lay	1912
Willmar 6173—Kandiyohi Co								
General Hospital	Gen	Part	30	23	7	No	M D	1916
Willmar Hospital	Cen	Indep	1	24	4	Yes	M D	1907
Willmar State Asylum	N&M	State	1000	810		No	M D	1912
Windom 2123—Cottonwood Co								
Windom Hospital	Gen	City	16	5	2	No	R N	1921
Winnebago 1701—Faribault Co								
Winnebago Community Hospital	Gen	Part	10	4	4	No	M D	1926
Winona 2080—Winona Co								
Winona General Hospital	Gen	Indep	124	45	20	No	R N	1894
Worthington 388—Nobles Co								
Southwestern Minnesota Tuberculosis Sanatorium	TB	County	56	54		No	M D	1915
Worthington Clinic Hospital	Gen	Part	26	18	4	No	R N	1918
Worthington Hospital	Gen	Indiv	12	5	6	No	M D	1906
Related Institutions								
Altkin 1540—Altkin Co								
Beccroft Hospital	Gen	Indiv	9	2	4	No	M D	1924
Collegeville—Stearns Co								
St John's University Hospital	Inst 1	Indep	40	15		No	Lay	
Detroit Lakes 3675—Becker Co								
Detroit Hospital	Gen	Indiv	8	3	1	No	Lay	1914
Duluth 101463—St Louis Co								
Children's Home Society	Inst 1	Indep	12	2		No	Lay	1883
Contagious Hospital	Iso	City	32	3		No	R N	1909
St Louis County Almshouse Dispensary	Inst 1	County	85	83		No	Lay	1910
Fly 6156—St Louis Co								
Detention Hospital	Iso	City	16	3		No	M D	1909
Faribault 12767—Rice Co								
Minnesota School for the Blind	Inst 1	State	10	1		No	Lay	1866
Minnesota School for the Deaf	Inst 1	State	30	5		No	Lay	1863
Frazee 1041—Becker Co								
Frazee Hospital	Gen	Indiv	8	5	2	No	M D	1907
Gaylord 812—Sibley Co								
Gaylord Hospital	Surg	Indiv	10	3		No	M D	1892
Glenwood 2920—Pope Co								
Glenwood Hospital	Gen	Part	8	3	3	No	R N	1912
Greenbush 387—Rosenau Co								
General Hospital	Gen	Indiv	6	3	2	No	Lay	1927
Hibbing 15666—St Louis Co								
Hibbing Detention Hospital	Iso	City	15	3		No	R N	1911
Minneapolis 464306—Hennepin Co								
Barton Loring Home	Conv	Indep	25	6		No	R N	1912
Downtown Surgery	ENT	Indep	12	6		No	R N	1921
Homewood Hospital	Cen	Indiv	22	16		No	R N	1910
Minnesota Soldiers Home	Inst 1	State	91	78		No	Lay	1887
Parkview Sanatorium	Chron	City	149	133		No	M D	1900
Portland Resthome	Conv	Indiv	10	8		No	R N	1921
Rest Home	Conv	Indiv	22	15		No	Lay	1916
Rest Hospital	Conv	Part	17	14		No	R N	1893
Riverview Hospital	N&M	Indiv	22	11		No	Lay	1914
Vocational Hospital	Conv	Indep	50	30		No	R N	1918
Mudbaden—Scott Co								
Mudbaden Sulphur Springs Company	Conv	Indep	60	32		No	M D	1901
Owatonna 764—Steele Co								
Minnesota State Public School	Inst 1	State	40	30		No	Lay	1887
Nelson Hospital	Gen	Part	10	2	3	No	M D	1923
Pelican Rapids 1360—Otter Tail Co								
Dr Boyens Hospital	Gen	Indiv	12	2	4	No	M D	1900
Pelican Rapids Hospital	Gen	Indiv	8	3	3	No	M D	1900
Pipestone 3489—Pipestone Co								
Pipestone Indian School Hospital	Inst 1	Indian	15	5		Yes	Lay	1897
Red Wing 9600—Goodhue Co								
Minnesota State Training School for Boys	Inst 1	State	20	8		Yes	Lay	1868
Rochester 20621—Olmsted Co								
Cascade Sanitarium	Conv	Indiv	15	8		No	M D	1913
Sanitarium Hospital	Conv	Church	70	63		No	Lay	1920
St Cloud 21000—Stearns Co								
Minnesota State Reformatory	Inst 1	State	31	20		No	Lay	1887
St James 2808—Watsonwan Co								
St James Hospital	Inst 1	Church	20	10	6	No	Lay	1910
St Paul 21006—Ramsey Co								
Children's Preventorium of Ramsey County	TB	Indep	80	68		No	R N	1910
Junior League Convalescent Home for Women	Conv	Indep	1	9		No	R N	1923
Mr Robbins Rest Home	N&M	Indiv	14	12		No	P N	1914
Salvation Army Home and Hospital	Mater	Church	50	40	40	No	Lay	1890
Sandstone 1083—Pine Co								
Sandstone Hospital	Cen	Indiv	8	3	2	No	M D	1919
Sauk Center 2716—Stearns Co								
Long Hospital	Gen	Indiv	10	4	3	No	Lay	1920
Shakopee 2023—Scott Co								
Mudcure Sanitarium	Conv	Indep	100	46		No	M D	1900
Soudan—St Louis Co								
Soudan Hospital	Gen	Indus	10	8		Yes	M D	1900
Stillwater 7173—Washington Co								
Minnesota State Prison Hospital	Inst 1	State	34	20		No	M D	1914

MINNESOTA—Continued

Related Institutions	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt. M.D. R.N. Layman	Year Est
Virginia 11963—St Louis Co	Iso	City	34	2	No	M D	1903	
City Detention Hospital								
Watertown 594—Carver Co	Cen	Indiv	6	2	No	Lay	1905	
Cottage Hospital								
Shrader and Lee Hospital	Gen	Indiv	7	2	6	No	R N	1924
Summary for Minnesota								
	Number		Beds		Patients		Basinets	
Hospitals and sanatoriums	181		24 632		19 913		1 410	
Related institutions	47		1 405		8		71	
Totals	228		26 037		20 766		1 481	
Refused registration	9		231				14	

MISSISSIPPI

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinsets	Outpatient Dept	Supt M.D. R.N. Layman	Year Est
Aberdeen 392—Monroe Co	Gen	Indep	22	5	2	No	R N	1930
Aberdeen Hospital								
Amory 3214—Monroe Co	Gen	Indep	38	15	2	No	M D	1916
Gilmore Sanitarium								
Biloxi 1480—Harrison Co	Gen	Indep	50	21	8	No	R N	1920
Biloxi Hospital								
Booneville 1003—Prentiss Co	Gen	Indep	50	20		No	M D	1916
North East Mississippi Hos pital								
Brookhaven 5988—Lincoln Co	Gen	Church	50	15	8	Yes	R N	1914
King's Daughters Hospital								
Canton 473—Madison Co	Gen	Indep	18	2	5	No	R N	1929
Madison County Kings Daughters Hospital								
Centerville 1344—Wilkinson Co	Gen	Part	28	13	4	No	M D	1928
Field Memorial Hospital								
Charleston 2014—Tallahatchie Co	Gen	Indiv	18	10	1	No	M D	1930
Charleston Hospital								
Clarksdale 10043—Coahoma Co	Gen	Frat	15	6		No	Lay	1927
Ancient Order of Watchmen Hospital (col)	Gen	Indep	22	7	4	No	R N	1923
Clarksdale Hospital								
Columbia 4803—Marion Co	Gen	Indiv	37	20	2	Yes	M D	1910
Columbia Clinic Hospital								
Columbus 10743—Lowndes Co	Cen	Indiv	30	12	2	Yes	R N	1906
Columbus Hospital	Gen	Indiv	30	10	6	No	M D	1924
Fitts Hospital								
Corinth 6920—Alcorn Co	Cen	Indiv	12	4	3	No	R N	1896
Corinth Hospital	Gen	Indep	70	12	5	Yes	M D	1913
McRae Hospital								
Electric Mills 1084—Kemper Co	Indus	Indus	46	19	4	No	M D	1922
Ceo C Hixon Mem Hosp								
Ellisville 212—Jones Co	N&M	State	250	250		Yes	M D	1900
Mississippi School and Colony for Feeble-minded								
Greenville 14807—Washington Co	Gen	Indep	100	70	14	No	Lay	1890
King's Daughters Ho p								
Greenwood 11123—Leflore Co	Gen	Indep	30	18	6	No	R N	1910
King's Daughters Hosp								
Grenada 4340—Grenada Co	Gen	Indiv	50	12	4	No	M D	1903
Grenada General Ho pital								
Gulport 1954—Harrison Co	Cen	Church	100	40	8	No	R N	1906
King's Daughters Ho p	N&M	VetBur	40	40		No	M D	1911
U S Veteo Hosp No 74								
Hattiesburg 18001—Forrest Co	Gen	Church	70	33	12	No	Lay	1900
Methodist Hospital								
South Mississippi Infirm	Gen	Indiv	60	20	10	Yes	Lay	1901
Houston 147—Chickasaw Co	Gen	Indep	40	17	3	No	M D	1900
Houston Ho pital								
Jackson 48282—Hinds Co	Gen	Indiv	50	24	12	No	R N	1910
Jackson Infirm	Gen	Church	100	78	10	No	Lay	1900
Mississippi Baptist Hosp								
Mississippi State Charity Hospital	Cen	State	110	70	2	No	M D	1912
Mississippi State Ho pital	N&M	State	2 401	0		No	M D	1911
Dr Willis Walley Ho p	Cen	Indiv	60	11	2	Yes	R N	1913
Laurel 18017—Jones Co	Cen	Indiv	50	10	10	No	R N	1915
Laurel General Hospital								
South Mississippi Charity Ho pital	Gen	State	100	70	10	Yes	M D	1917
Leighton 20—Holmes Co	Gen	Indep	17	5	2	No	R N	1900
Holmes County Community Ho pital								
Lumberton 2074—Lamar Co	Indus	Indus	60	70	6	Yes	Lay	1900
Lumberton Ho pital								
Madison 100—Neshoba Co	Gen	Indiv	20	6	1	No	M D	1910
Madison Ho pital								
McComb 100—Pike Co	Cen	Indiv	20	11	2	No	R N	1911
McComb City Ho pital	Cen	Indiv	20	11	2	No	R N	1911
McComb Infirm								
Meridian 1904—Iauderdale Co	Gen	Indiv	41	10	9	Yes	M D	1910
Anderson Infirm								
Eaton Mississippi State Ho pital	N&M	State	8 401	8		No	M D	1910
King's Daughter Tulareu tols Ho pital	TB	Church	44	20	3	No	Lay	1910
Matty Heron Ho pital	Cen	State	100	30	10	Yes	M D	1910
Meridian Sanitarium	Cen	Indiv	0	10	0	No	Lay	1911
Dr F C Riley's Children's Maternity Hosp & Clinic	Chil	Indiv	2	5	0	Yes	Lay	1910
Public Infirm	Cen	Part	20	6	0	No	M D	1910

Key to symbols and abbreviations is on page 1073

MISSOURI—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt M D	R N Layman	Year Est
St Charles 10 491—St Charles Evangelical Emmaus Home for 1 epileptics and feeble minded	Lpl 1 CM Church	Church	120	113	30	No	Jay	1901	
St Joseph's Hospital	Gen	Church	43	30	7	No	R N	1891	
St Joseph 80 935—Buchanan Co	N&M	Indiv	30	20	No	M D	1914		
Dr Byrd's Sanitarium	N&M	Church	200	115	20	No	Jay	1898	
Missouri Methodist Hosp	Gen	Church	12	68	16	No	R N	1860	
St Joseph's Hospital	N&M	State	2 236	2 004	Yes	M D	1874		
State Hospital No 2	N&M	Indep	40	25	No	M D	1907		
Dr O R Woodson's Sanit	N&M	Indep	40	25	No	M D	1907		
St Louis 821 960—St Louis City	Gen	Church	2 40	180	Yes	Jay	18 0		
Alexian Brothers Hosp	Gen	Indiv	35	15	Yes	M D	1906		
American Hospital	Gen	Indiv	35	15	Yes	M D	1906		
Barnard Free Skin and Cancer Hospital	Sk&Ca	Indep	40	78	Yes	R N	1903		
Barnes Hospital	Gen	Church	270	231	Yes	M D	1914		
Beaumont Hospital	Gen	Indep	13	11	No	R N	1927		
Bethesda Hospital	Gen	Church	103	94	12	No	R N	1889	
Central Hospital	Gen	Indep	70	50	14	No	M D	1893	
Christian Hospital	Gen	Indep	100	75	25	No	R N	1900	
City Isolation Hospital	Gen	City	300	109	No	M D	1916		
City Sanitarium	N&M	City	3 341	3 500	No	M D	1869		
De Paul Hospital	Gen	Church	250	New	35	Yes	R N	1930	
Evangelical Deaconess Home and Hospital	Gen	Church	160	96	25	No	Lay	1889	
Frisco Employees Hosp	Indus	Indus	100	76	Yes	M D	1898		
Jewish Hospital	Gen	Indiv	268	194	33	Yes	R N	1900	
Josephine Hospital	Gen	Indep	50	36	7	No	R N	1899	
Lutheran Hospital	Gen	Church	175	98	20	No	R N	1888	
Missouri Baptist Hosp	Gen	Church	3 8	298	41	No	Lay	1889	
Missouri Pacific Hospital	Indus	Indus	300	140	Yes	M D	18 6		
Mt St Rose Sanatorium	TB	Church	1 40	125	No	Lay	1900		
Peoples Hospital (col)	Gen	Indep	50	20	6	No	R N	1918	
Robert Koch Hospital	TB	City	498	478	Yes	M D	1910		
St Ann's Lying In Hosp	Mater	Church	50	40	14	No	M D	18 3	
St Anthony's Hospital	Gen	Church	200	8	51	No	R N	18 7	
St John's Hospital	Gen	Church	275	230	40	Yes	Lay	1871	
St Louis Children's Hospital	Chil	Indep	143	87	Yes	R N	18 7		
St Louis City Hospital	Gen	City	900	750	56	Yes	M D	18 3	
St. Louis City Hosp No 2 (col)	Gen	City	420	287	30	Yes	M D	1919	
St. Louis Mater Hosp	Mater	Indep	104	68	104	Yes	Lay	1908	
St. Louis Training School	MenDef	City	546	4 9	Yes	M D	1924		
St. Luke's Hospital	Gen	Church	186	144	24	Yes	Lay	18 5	
St. Mary's Hospital	Gen	Church	270	186	40	Yes	Lay	18 4	
St. Mary's Infirmary	Gen	Church	125	108	Yes	R N	18 7		
St. Vincent's Sanitarium	N&M	Church	300	250	No	Lay	18 5		
Shriners Hospital for Crippled Children	Ortho	Frat	100	101	Yes	R N	1904		
U S Marine Ho p No 18	Gen	USPHS	100	73	Yes	M D	18 8		
Westminster Hospital	Gen	Indiv	100	40	20	No	M D	1914	
Sedalia 20 806—Pettis Co	Gen	City	10	6	No	R N	192		
John H. Bothwell Memorial Hospital	Gen	City	120	New	12	No	R N	1930	
St. Joseph 5 6 6—Scott Co	Gen	Part	10	6	2	No	M D	192	
St. Joseph Emergency Hosp	Gen	Part	10	6	2	No	M D	192	
Springfield 57 527—Greene Co	Gen	Church	35	25	5	No	R N	1906	
Burge Hospital	Gen	Church	105	80	9	No	Lay	18 3	
St. John's Hospital	Gen	Indep	100	62	10	No	R N	1894	
Stella 226—Newton Co	Gen	Indiv	20	8	4	No	M D	1903	
O. Cardwell Hospital	Gen	Indiv	20	6	2	No	R N	1927	
Frenton 6 992—Grundy Co	Gen	Indiv	20	6	6	No	M D	1910	
Cullers Hospital	Gen	Indiv	20	6	6	No	M D	1910	
Wright Hospital	Gen	Indiv	20	6	6	No	M D	1910	
Washington 5 918—Franklin Co	Gen	Church	36	23	6	No	R N	1906	
St. Francis Hospital	Gen	Church	36	23	6	No	R N	1906	
Webb City 6 876—Jasper Co	Gen	County	103	78	No	M D	1916		
Jasper Co. Tuber Hosp	TB	County	103	78	No	M D	1916		
Webster Groves 16 487—St. Louis Co	N&M	Indep	35	30	No	Jay	1911		
Glenwood Sanatorium	N&M	Indep	35	30	No	Jay	1911		
West Plains 3 33—Howell Co	Gen	Indiv	18	15	2	No	M D	1900	
Christa Hogan Hospital	Gen	Indiv	18	15	2	No	M D	1900	

Related Institutions

Diamond 515—Newton Co	Gen	Indiv	8	3	No	M D	1918		
Dr. Riley F. Cheatham's Hospital	Gen	Indiv	8	3	No	M D	1918		
Higginsville 3 339—Lafayette Co	Inst 1	State	25	12	Yes	Lay	1891		
Confederate Home & Hosp	Inst 1	State	70	46	Yes	M D	1885		
Jefferson City 21 596—Cole Co	Inst 1	State	70	46	Yes	M D	1885		
Missouri State Penit Hosp	Inst 1	State	70	46	Yes	M D	1885		
Kansas City 399 746—Jackson Co	Inst 1	Church	12	3	No	R N	1911		
Kansas City Boys Orphan Home	Inst 1	Church	12	3	No	R N	1911		
Trowbridge Training School for Nervous & Backward Children	MenDef	Indiv	25	25	No	M D	1917		
Lexington 4 595—Lafayette Co	Gen	Indiv	10	5	No	Lay	1900		
Highland Heights Hospital	Gen	Indiv	10	5	No	Lay	1900		
Liberty 3 516—Clay Co	Inst 1	Frat	85	67	No	M D	1909		
Missouri Odd Fellows Home Hospital	Inst 1	Frat	85	67	No	M D	1909		
Mountain Grove 2 229—Wright Co	Gen	Indiv	7	4	2	No	M D	1909	
Ryan Hospital	Gen	Indiv	7	4	2	No	M D	1909	
Paris 1 367—Monroe Co	Gen	Indiv	5	4	1	Yes	M D	1919	
McMurry Hospital	Gen	Indiv	5	4	1	Yes	M D	1919	
Parkville 636—Platte Co	Inst 1	Indiv	21	20	No	Jay	1900		
Waverly Hospital	Inst 1	Indiv	21	20	No	Jay	1900		
Richland 94—Pulaski Co	Gen	Indiv	5	1	No	M D	1900		
Richland Hospital	Gen	Indiv	5	1	No	M D	1900		

MISSOURI—Continued

Related Institutions	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt M D	R N Layman	Year Est
Rogersville 461—Webster Co	Gen	Indiv	7	1	No	M D	1915		
Rogersville Hospital	Gen	Indiv	7	1	No	M D	1915		
Rolla 3 670—Phelps Co	Inst 1	State	11	2	Yes	M D	1926		
Missouri School of Mines Hospital	Inst 1	State	11	2	Yes	M D	1926		
St. James 1 294—Phelps Co	Inst 1	State	45	45	No	Lay	1897		
State Federal Soldiers Home Hospital	Inst 1	State	45	45	No	Lay	1897		
St. Joseph 80 935—Buchanan Co	Iso	City	30	3	No	M D	1908		
Sunnyslope Hospital	Iso	City	30	3	No	M D	1908		
St. Louis 821 960—St. Louis City	Inst 1	City	90	80	No	Lay	18 4		
City Infirmary	Inst 1	City	90	80	No	Lay	18 4		
Hosp of Masonic Home	Inst 1	Trat	120	90	No	M D	1886		
Salvation Army Women's Home and Hospital	Mater	Church	15	10	40	No	Lay	1895	
Shelbina 1 876—Shelby Co	Gen	Indiv	9	6	No	M D	1925		
Shelbina Hospital	Gen	Indiv	9	6	No	M D	1925		
Springfield 57 527—Greene Co	EFNT	Indep	14	7	No	M D	1902		
Anderson Home Infirmary	EFNT	Indep	14	7	No	M D	1902		
Valley Park 17 2—St. Louis Co	Chil	Indep	60	7	Yes	R N			
Ridge Farm	Chil	Indep	60	7	Yes	R N			
Warrensburg 5 146—Johnson Co	Gen	Indiv	10	4	1	No	M D	1900	
Oak Hill Sanitarium	Gen	Part	10	3	1	No	M D	1919	
Warrensburg Clinic	Gen	Part	10	3	1	No	M D	1919	
Webster Groves 16 487—St. Louis Co	Conv	Frat	30	15	No	Jay	1911		
Miriam Convalescent Home	Conv	Frat	30	15	No	Jay	1911		
West Plains 3 33—Howell Co	Gen	Indiv	7	3	No	Lay	1905		
Cottage Hospital	Gen	Indiv	7	3	No	Lay	1905		

Summary for Missouri

Hospitals and sanatoriums	Number	Beds	Patients	Basinets
Related institutions	23	25 499	20 749	1 254
Totals	159	26 065	21 141	1 254
Refused registration	32	1 291		20

MONTANA

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt M D	R N Layman	Year Est
Anaconda 12 494—Deerlodge Co	Gen	Church	65	35	6	Yes	Jay	1889	
St. Ann's Hospital	Gen	Church	65	35	6	Yes	Jay	1889	
Billings 16 350—Yellowstone Co	Gen	Church	50	41	12	No	R N	1922	
Billings Deaconess Hosp	Gen	Church	200	34	12	No	R N	1898	
St. Vincent's Hospital	Gen	Church	200	34	12	No	R N	1898	
Bozeman 6 815—Gallatin Co	Gen	Church	50	50	10	No	R N	1911	
Bozeman Deaconess Hosp	Gen	Church	50	50	10	No	R N	1911	
Browning 1 172—Glacier Co	Gen	Indian	70	24	Yes	Jay	1914		
Blackfeet Hospital	Gen	Indian	70	24	Yes	Jay	1914		
Butte 39 37—Silver Bow Co	Gen	Church	30	12	No	R N	1917		
Butte Deaconess Hospital	Gen	Church	120	6	6	Yes	Jay	18 0	
Murray Hospital	Gen	Church	10	6	17	Yes	R N	1881	
St. James Hospital	Gen	Church	10	6	17	Yes	R N	1881	
Silver Bow County Hosp	Gen	County	140	17	Yes	Lay	1885		
Choteau 1 6—Teton Co	Gen	Indiv	15	5	5	No	R N	1914	
Choteau Hospital	Gen	Indiv	15	5	5	No	R N	1914	
Conrad 1 449—Pondera Co	Gen	Church	34	15	10	No	Jay	1907	
St. Mary's Hospital	Gen	Church	34	15	10	No	Jay	1907	
Crow Agency 117—Big Horn Co	Gen	Indian	27	12	6	Yes	Jay	1910	
Crow Agency Hospital	Gen	Indian	27	12	6	Yes	Jay	1910	
Deer Lodge 5 510—Fowler Co	Gen	Army	40	20	No	M D	18 7		
Montana State Tuberculosis Sanitarium	TB	State	15	142	No	M D	1911		
St. Joseph's Hospital	Gen	Church	15	15	6	No	R N	1900	
Dillon 2 422—Beaverhead Co	Gen	Indep	25	8	No	R N	1911		
Barrett Hospital	Gen	Indep	25	8	No	R N	1911		
Forrest 1 901—Ro. bud Co	Gen	Indiv	20	1	5	No	Jay	1911	
Rosebud Memorial Hosp	Gen	Indiv	20	1	5	No	Jay	1911	
Fort Benton 1 109—Choteau Co	Gen	Church	42	1	6	No	R N	1885	
St. Clare Hospital	Gen	Church	42	1	6	No	R N	1885	
Fort Harrison—Lewis and Clark Co	Gen	Vet	20	1	1	Yes	M D	1911	
U S Veterans Hosp No 2	Gen	Vet	20	1	1	Yes	M D	1911	
Fort Missoula—Missoula Co	Gen	Army	40	20	No	M D	18 7		
Station Hospital	Gen	Army	40	20	No	M D	18 7		
Glasgow 2 216—Valley Co	Gen	Church	21	1	6	No	R N	1911	
Frances Mahon Deaconess Hospital	Gen	Church	21	1	6	No	R N	1911	
Gladwin 4 629—Dawson Co	Gen	Indiv	25	9	No	M D	1912		
Gladwin General Ho pital	Gen	Indiv	25	9	No	M D	1912		
Northern Pacific Ho pital	Gen	Indiv	25	9	No	M D	1912		
Great Falls 2 525—Cascade Co	Gen	Church	20	1	5	No	R N	1915	
Columbia Ho pital	Gen	Church	20	1	5	No	R N	1915	
Montana Deaconess Hosp	Gen	Church	20	1	5	No	R N	1915	
Hamilton 1 876—Lavalli Co	Gen	Indep	16	1	5	No	R N	1914	
Hamilton General Ho pital	Gen	Indep	16	1	5	No	R N	1914	
Hardin 1 109—Big Horn Co	Gen	Indiv	15	4	No	R N	1911		
Labette Hospital	Gen	Indiv	15	4	No	R N	1911		
Harlem 70—Blaine Co	Gen	Indian	15	2	Yes	M D	1911		
Fort Belknap Indian Hosp	Gen	Indian	15	2	Yes	M D	1911		
Harre 67—Hill Co	Gen	Church	4	1	1	No	R N	1911	

REGISTERED HOSPITALS

NEBRASKA—Continued

MONTANA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt M D Layman	R N	Year Est
Lewiston 5358—Tergus Co	Gen	Church	75	38	16	Yes	RN	1903	
St Joseph's Hospital	Gen	Indiv	14	9	2	No	MD	1921	
Libby 1752—Lincoln Co	Gen	Indiv	18	12	1	No	Lay	1927	
Livingston 6391—Park Co	Gen	Indiv	28	11	10	Yes	MD	1913	
Lott's Hospital	Gen	Indiv	12	6	3	No	RN	1905	
Park Hospital	Gen	Indiv	12	6	3	No	RN	1905	
Malta 1342—Phillips Co	Gen	Indiv	12	6	3	No	Lay	1910	
Mary Servant Mem Hosp	Gen	Church	94	45	6	No	Lay	1910	
Miles City 717—Custer Co	Gen	Church	94	45	6	No	Lay	1910	
Miles City Hospital	Gen	Church	94	45	6	No	Lay	1910	
Missoula 1467—Missoula Co	Indus	Church	128	63	12	No	RN	1873	
Northern Pacific Hospital	Gen	Part	40	26	8	No	MD	1918	
St Patrick's Hospital	Gen	Part	40	26	8	No	MD	1918	
Thornton Hospital	Gen	Indep	16	10	4	No	RN	1904	
Pleantywood 1226—Sheridan Co	Gen	Indep	16	10	4	No	Lay	1916	
Sheridan Memorial Hosp	Gen	Church	10	4	3	No	Lay	1916	
Polson 1400—Lake Co	Gen	Church	10	4	3	No	Lay	1916	
Hotel Dieu Hospital	Gen	Church	10	4	3	No	Lay	1916	
Poplar 1046—Roosevelt Co	Gen	Church	10	4	3	No	Lay	1916	
Fort Peck Indian School	Gen	Indian	25	17	3	Yes	Lay	1914	
Hospital	Gen	Indian	25	17	3	Yes	Lay	1914	
Red Lodge 3026—Carbon Co	Indus	Indus	26	6	4	Yes	MD	1903	
Mt Maurice Hosp & Sanit	Indus	Indus	26	6	4	Yes	MD	1903	
Roundup 251—Musselshell Co	Indus	Indus	26	6	4	Yes	MD	1903	
Musselshell Valley Hospital	Gen	Church	42	16	6	Yes	RN	1914	
St Ignace 375—Lake Co	Gen	Church	24	14	6	No	RN	1910	
Holy Family Hospital	Gen	Church	24	14	6	No	RN	1910	
Sidney 2010—Richland Co	Gen	Church	24	14	6	No	RN	1910	
Sidney Deaconess Hospital	Gen	County	25	12	10	No	RN	1910	
Terry 719—Prairie Co	Gen	County	25	12	10	No	RN	1910	
Terry Hospital	Gen	County	25	12	10	No	RN	1910	
Three Forks 584—Callahan Co	Gen	Indep	20	6	3	No	RN	1910	
Three Forks Hospital	Gen	Indep	20	6	3	No	RN	1910	
Warm Springs 110—Deer Lodge Co	N & M	State	150	51	563	No	MD	1877	
Montana State Hospital	N & M	State	150	51	563	No	MD	1877	

Related Institutions

Beare Creek 472—Carbon Co	Gen	Indiv	6	5	1	Yes	Lay	1911	
Ole Creek Hospital	Gen	Indiv	7	4	4	No	RN	1913	
Big Timber 1224—Sweet Grass Co	Gen	Indiv	9	4	4	No	Lay	1918	
Big Timber Hospital	Gen	Indiv	9	4	4	No	Lay	1918	
Conrad 1469—Pondera Co	Gen	Indiv	9	4	4	No	Lay	1918	
DuBois Hospital	Gen	Indiv	9	4	4	No	Lay	1918	
Deer Lodge 310—Powell Co	Inst 1	State	20	6	1	Yes	MD		
Montana State Penitentiary	Inst 1	State	20	6	1	Yes	MD		
Hospital	Inst 1	State	20	6	1	Yes	MD		
Great Falls 2852—Cascade Co	Iso	Cy & Co	30	5	1	No	RN	1917	
Great Falls Detention Hos	Iso	Cy & Co	30	5	1	No	RN	1917	
Harlem 708—Blaine Co	Gen	Indiv	11	6	1	No	MD	1929	
Harlem Hospital	Gen	Indiv	11	6	1	No	MD	1929	
Helena 11803—Lewis & Clark Co	Mater	Indep	18	6	6	No	Lay	1900	
Florence Crittenton Home	Mater	Indep	18	6	6	No	Lay	1900	
Lewistown 5358—Fergus Co	Inst 1	County	13	6	1	Yes	RN	1893	
Fergus County Hospital	Inst 1	County	13	6	1	Yes	RN	1893	
Livingston 6391—Park Co	Gen	Indiv	7	2	5	No	GN	1923	
Robinson Hospital	Gen	Indiv	7	2	5	No	GN	1923	
Philipsburg 1300—Granite Co	Inst 1	County	8	6	1	Yes	MD	1893	
Granite County Hospital	Inst 1	County	8	6	1	Yes	MD	1893	
Stevensville 692—Rayall Co	Gen	Indiv	7	2	2	Yes	MD	1917	
Stevensville Hospital	Gen	Indiv	7	2	2	Yes	MD	1917	
Iwin Bridges 611—Madison Co	Inst 1	State	40	5	1	No	Lay	1894	
State Orphan Home	Inst 1	State	40	5	1	No	Lay	1894	
White Sulphur Springs 575—Meagher Co	Gen	Indiv	14	5	4	Yes	MD	1910	
McKay Hospital	Gen	Indiv	14	5	4	Yes	MD	1910	

Summary for Montana

Hospitals and sanatoriums	Number	Beds	Average Patients	Basinets	Outpatient	Supt M D Layman	R N	Year Est
Related Institutions	13	4786	63	367	26			
Totals	63	4971	343	393	3			
Refused registration	3	40						

NEBRASKA

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt M D Layman	R N	Year Est
Albion 1378—Brown Co	Gen	Indiv	28	15	3	No	MD	1922	
Albion Hospital	Gen	Indiv	28	15	3	No	MD	1922	
Alliance 6669—Box Butte Co	Gen	Church	77	56	7	No	Lay	1910	
St Joseph's Hospital	Gen	Indiv	10	6	2	No	RN	1910	
Auburn 3068—Nebraska Co	Gen	Indiv	10	6	2	No	RN	1910	
Auburn Hospital	Gen	Indiv	10	6	2	No	RN	1910	
Aurora 2715—Hamilton Co	Gen	Part	16	8	4	No	RN	1916	
Aurora Hospital	Gen	Part	16	8	4	No	RN	1916	
Atell 328—Kearney Co	N & M	Indep	142	140		No	Lay	1913	
Bethpage 1097—Gage Co	Gen	Indiv	25	15	4	Yes	RN	1901	
Beatrice 1097—Gage Co	Gen	Church	100	30	11	Yes	RN	1913	
Beatrice Sanitarium	Gen	Church	100	30	11	Yes	RN	1913	
Beatrice Hospital	Gen	Church	100	30	11	Yes	RN	1913	
Nebraska Institution for Feeble-minded	TeM	State	1096	870		No	MD	1884	
Blair 2791—Washington Co	Gen	Indiv	15	4	2	No	RN	1906	
Blair Hospital	Gen	Indiv	15	4	2	No	RN	1906	
Broken Bow 2715—Custer Co	Gen	Indiv	35	10	4	Yes	MD	1923	
Broken Bow Hospital	Gen	Indiv	35	10	4	Yes	MD	1923	
Broken Bow Sanitarium	Gen	Indiv	35	10	4	Yes	MD	1923	
Cambridge 1203—Furnas Co	Gen	Part	25	14	2	No	MD	1906	
Republican Valley Hospital	Gen	Part	25	14	2	No	MD	1906	
Central City 2474—Merrick Co	Gen	Indiv	10	4		No	MD	1920	
J E Benton Hospital	Gen	Indiv	10	4		No	MD	1920	

NEBRASKA—Continued											
Hospitals and Sanatoriums			Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt M D Layman	R N	Year Est
Chadron 4606—Dawes Co	Gen	City	23	7	7	No	Lay	1923			
Chadron Municipal Hosp	Gen	City	23	7	7	No	Lay	1923			
Columbus 689—Platte Co	Gen	Church	12	7	3	No	MD	1901			
Columbus Hospital	Gen	Church	12	7	3	No	MD	1901			
St Mary's Hospital	Gen	Indep	13	7	3	No	MD	1914			
David City 231—Butler Co	Gen	Indep	20	6	2	No	MD	1914			
David City Hospital	Gen	Indep	20	6	2	No	MD	1914			
Fairbury 1192—Jefferson Co	Gen	Indiv	20	12	10	No	RN	1913			
Taylor Hospital	Gen	Indiv	20	12	10	No	RN	1913			
Ialls City 578—Richardson Co	Gen	Indiv	10	1	1	No	RN	1926			
Ialls City Hospital	Gen	Indiv	10	1	1	No	RN	1926			
General Hospital	Gen	Indiv	12	4	2	No	MD	1923			
Iarnam 11—Dawson Co	Gen	Indiv	12	4	2	No	MD	1923			
Reeves Memorial Hospital	Gen	Indiv	12	4	2	No	MD	1923			
It Crook 710—Sarpy Co	Gen	Army	20	18		Yes	MD	1893			
Station Hospital	Gen	Army	20	18		Yes	MD	1893			
It Omaha—Douglas Co	Gen	Army	20	18		No	MD	1874			
Station Hospital	Gen	Army	20	18		No	MD	1874			
It Robinson 11—Dawes Co	Gen	Army	20	18		No	MD	1874			
Station Hospital	Gen	Army	20	18		No	MD	1874			
Iremont 1110—Dodge Co	Gen	Indiv	22	14	6	No	RN	1921			
Military Avenue Hospital	Gen	Indiv	22	14	6	No	RN	1921			
Richmond Hospital	Gen	Indiv	22	14	6	No	RN	1921			
Grand Island 1861—Hall Co	Gen	Church	135	60	10	No	RN	1921			
St. Francis Hospital	Gen	Church	135	60	10	No	RN	1921			
Hartington 148—Cedar Co	Gen	Indiv	16	5		No	MD	1901			
St. John's Hospital	Gen	Indiv	16	5		No	MD	1901			
Hastings 1540—Adams Co	Gen	Indep	100	55	15	No	RN	1915			
Mary Manning Mem Hosp	Gen	Indep	100	55	15	No	RN	1915			
Inclusive 10—Adams Co	N & M	State	1504	140		No	MD	1883			
Hastings State Hospital	N & M	State	1504	140		No	MD	1883			
Kearney 856—Buffalo Co	Gen	Church	70	20	10	No	RN	1921			
Good Samaritan Hospital	Gen	Church	70	20	10	No	RN	1921			
Hosp for the Tuberculous	Gen	Church	70	20	10	No	RN	1921			
Kimball 1711—Kimball Co	Gen	Indiv	14	9	5	No	RN	1916			
Kimball Hospital	Gen	Indiv	14	9	5	No	RN	1916			
Lincoln 703—Lincoln Co	Gen	Church	103	56	14	No	RN	1916			
Bryan Memorial Hosp	Gen	Church	103	56	14	No	RN	1916			
Green Gables Dr Benj F	Gen	Indep	115	93	6	No	MD	1901			
Bailey Sanatorium	Gen	Indep	115	93	6	No	MD	1901			
Lincoln General Hospital	Gen	Indep	132	99	22	No	RN	1923			
Lincoln State Hospital	Gen	Indep	132	99	22	No	RN	1923			
Nebraska Orthopedic Hos	Ortho	State	1180	1149		No	MD	1870			
St. Elizabeth's Hospital	Gen	State	105	102	10	Yes	MD	1905			
McCook 656—Red Willow Co	Gen	State	175	121	25	No	RN	1889			
St. Catherine of Siena	Gen	Church	65	22	8	No	Lay	1921			
Hospital	Gen	Church	65	22	8	No	Lay	1921			
Minden 1716—Kearney Co	Gen	Indiv	20	7	8	No	MD	1923			
Seeley Hospital	Gen	Indiv	20	7	8	No	MD	1923			
Nebraska City 720—Otoe Co	Gen	Church	35	21	10	No	RN	1921			
St. Mary's Hospital	Gen	Church	35	21	10	No	RN	1921			
Norfolk 10717—Madison Co	N & M	State	920	929	6	No	MD	1887			
Norfolk State Hospital	N & M	State	920	929	6	No	MD	1887			
Veres Sanitarium	Gen	Indiv	30	22	6	No	Lay	1923			
North Platte 12061—Lincoln Co	Gen	Indiv	12	7	3	No	Lay	1923			
Redfield Dent Hospital	Gen	Indiv	12	10	3	No	MD	1923			
Wurtel Hospital	Gen	Indiv	12	7	3	No	Lay	1923			
Oakland 1443—Burt Co	Gen	Indiv	12	7	3	No	Lay	1923			
Oakland Community Hosp	Gen	Indiv	12	7	3	No	Lay	1923			
Omaha 21400—Douglas Co	Gen	Church	100	76	6	No	RN	1883			
Bishop Clarkson Memorial	Gen	Church	100	76	6	No	RN	1883			
Hospital	Gen	Church	100	76	6	No	RN	1883			
Creighton Memorial St	Gen	Church	400	246	33	No	Lay	1880			
Joseph's Hospital	Gen	Church	400	246	33	No	Lay	1880			
Douglas County Hospital	Gen	Church	400	246	33	No	Lay	1880			
Evangelical Covenant Hos	Gen	Church	90	73	16	Yes	Lay	1905			
Immanuel Deaconess Inst	Gen	Church	119	84	14	No	Lay	1890			
tute	Gen	Church	119	84	14	No	Lay	1890			
Lord Lister Hospital	Gen	Church	119	84	14	No	Lay	1890			
Lutheran Hospital	Gen	Church	119	84	14	No	Lay	1890			
Nebraska Methodist Lpsce	Gen	Church	119	84	14	No	Lay	1890			
pal Hospital	Gen	Church	119	84	14	No	Lay	1890			
Nicholas Senn Hospital	Gen	Church	119	84	14	No	Lay	1890			
Omaha Maternity Hospital	Gen	Church	119	84	14	No	Lay	1890			
Radium Hospital	Gen	Church	119	84	14	No	Lay	1890			
St. Catherine's Hosp	Gen	Church	119	84	14	No	Lay	1890			
South Side General Hosp	Gen	Church	119	84	14	No	Lay	1890			
University of Nebraska	Gen	Church	119	84	14	No	Lay	1890			
Hospital	Gen	Church	119	84	14	No	Lay	1890			
Wise Memorial Hospital	Gen	Church	119	84	14	No	Lay	1890			
Ord 2296—Valley Co	Gen	Indiv	15	10		No	MD	1917			
Ord Hospital	Gen	Indiv	15	10		No	MD	1917			
Oxford 110—Furnas Co	Gen	Indep	14	9	5	No	MD	1929			
Oxford General Hospital	Gen	Indep	14	9	5	No	MD	1929			
Pawnee City 153—Pawnee Co	Gen	Indiv	30	15	4	No	RN	1916			
Pawnee Hospital	Gen	Indiv	30	15	4	No	RN	1916			
Schuyler 258—Goff Co	Gen	Indiv	13	9	2	No	MD	1922			
Kolouch Hospital	Gen	Indiv	13	9	2	No	MD	1922			
Scottsbluff 846—Scotts Bluff	Gen	Church	60	32	10	No	Lay	1924			
West Nebraska Methodist	Gen	Church	60	32	10	No	Lay	1924			
Episcopal Hospital	Gen	Church	60	32	10	No	Lay	1924			
Seward 2737—Seward Co	Gen	Part	20	8	5	No	RN	1902			
Morrow Hospital	Gen	Part	20	8	5	No	RN	1902			
Seward Hospital	Gen	Part	20	8	5	No	RN	1902			
Sidney 3306—Cheyenne Co	Gen	Indiv	25	10	5	No	MD	1927			
Taylor Hospital	Gen	Indiv	25	10	5	No	MD	1927			
Speer 63—Boyd Co	Gen	Part	12	4	3	No	RN	1905			
Spencer Hospital	Gen	Part	12	4	3	No	RN	1905			
Stratton 663—Hitchcock Co	Gen	Indiv	14	7		No	MD	1902			
Dr Stewart's Private Hosp	Gen	Indiv	20	11	4	No	RN	1920			
Stuart 763—Holt Co	Gen	Indiv	20	11	4	No	RN	1920			
Wilson Hospital	Gen	Indiv	20	11	4	No	RN	1920			
Sutton 1540—Clay Co	Gen	Indiv	10	4	3	No	Lay				
Sutton Hospital	Gen	Indiv	10	4	3	No	Lay				

NEBRASKA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinsets	Outpatient Dept	Supt M D R N Layman	Year Est
Tekamah 1804—Burt Co	Gen	Indiv	12	4	3	No	R N	1927
Tekamah General Hospital								
Tilden 1100—Madison Co	Gen	Indiv	10	5	2	No	R N	1920
Tilden Hospital								
Valentine 162—Cherry Co	Gen	Indiv	15	7	3	No	Lay	1927
Cherry County Hospital								
Walhill 1162—Thurston Co	Gen	Part	12	5	4	No	R N	
Dr Picotte Memorial Hosp								
Winnebago 633—Thurston Co	Gen	Indian	60	29	2	Yes	Lay	1916
Winnebago Indian Hosp								
York 5712—York Co	Gen	Church	50	28	6	No	R N	1914
Lutheran Hospital								
York Clinic and Clinic Hos	Gen	Part	15	4	6	No	R N	1920
pital								

Related Institutions

Arnold 899—Custer Co	Gen	Indiv	10	2	2	No	R N	1917
Arnold Hospital								
Atkinson 1144—Holt Co	Gen	Indiv	9	4	4	No	R N	1923
Atkinson General Hospital								
Beemer 571—Cuming Co	Gen	Indiv	10	1	2	No	M D	1901
Pleasant Hospital								
Burkett—Hall Co	Inst l	State	150	100	No	M D	1888	
Nebraska Soldiers and Sail								
ors Home								
Crawford 1703—Dawes Co	Gen	Indiv	10	4	No	M D	1918	
R L Irvin Hospital								
Dalton 453—Cheyenne Co	Gen	Indiv	6	1	2	No	M D	1929
Pioneer Memorial Hospital								
Genoa 1089—Nance Co	Gen	Part	6	2	No	R N	1928	
Emergency Hospital								
Genoa Hospital	Gen	Indiv	10	6	3	No	M D	1926
Genoa Indian School Hosp	Inst l	Indian	30	5	No	Lay	1886	
Kearney 876—Buffalo Co	Inst l	State	10	2	No	Lay	1880	
State Industrial School for								
Boys								
Lexington 2932—Dawson Co	Gen	Part	10	5	3	No	R N	1928
City General Hospital								
Lincoln 75933—Lancaster Co	Iso	City	20	4	No	Lay	1900	
Isolation Hospital								
Nebraska State Peniten	Inst l	State	20	2	No	M D	1914	
tiary Hospital								
Milford 830—Seward Co	Inst l	State	54	33	6	No	Lay	1881
Nebraska Industrial Home								
Nebraska Soldiers and Sail	Inst l	State	40	40	No	Lay	1896	
ors Home Hospital								
Newman Grove 1146—Madison Co	Gen	Part	10	3	1	No	M D	1920
Community Hospital								
Odell 412—Gage Co	Gen	Indiv	7	4	2	No	R N	1929
Odell General Hospital								
Omaha 21466—Douglas Co	Iso	City	40	8	No	R N	1919	
City Emergency Hospital								
Frederick Hospital	Gen	Indiv	8	3	8	No	M D	1917
Nebraska School for the	Inst l	State	12	4	No	Lay	1869	
Deaf								
Riverview Detention Home	Inst l	County	7	2	No	Lay	1903	
Salvation Army Women's								
Home and Hospital	Mater	Church	7	3	40	No	Lay	1896
Women's Detention Hosp	Vener	City	21	10	Yes	M D	1918	
Orchard 50—Antelope Co	Gen	Indiv	7	1	3	No	R N	1918
Orchard Hospital								
Palmer 588—Merrick Co	Gen	Indep	10	2	2	No	M D	1916
Cooldge Hosp & Sanat								
Plainview 1216—Pierce Co	Gen	Indep	8	2	2	Yes	R N	
Plainview General Hospital								
Plattsmouth 3093—Cass Co	Inst l	Frat	96	42	No	Lay	1903	
Nebraska Masonic Home								
St Paul 1621—Howard Co	Gen	Indiv	6	4	No	M D	1903	
St Paul Hosp tal								
Table Rock 613—Pawnee Co	Gen	Indiv	10	1	1	No	M D	1906
McGren Private Hospital								
Wahoo 2680—Saunders Co	Gen	Indiv	19	12	7	No	R N	1930
Community Hospital								
Wayne 2781—Wayne Co	Gen	Indiv	6	2	2	No	M D	1930
Bentback Hospital								
West Point 2225—Cuming Co	Inst l	Church	15	5	1	No	Lay	1903
St Joseph Home for Aged								
and Hospital								

Summary for Nebraska

	Number	Beds	Patients	Basinsets
Hospitals and sanatoriums	80	9 087	7 92	516
Related institutions	31	624	268	91
Totals	111	9 711	7 491	607
Refused registration	24	559		81

NEVADA

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinsets	Outpatient Dept	Supt M D R N Layman	Year Est
4ustin 1000—Lander Co	Gen	County	10	5	1	No	M D	1880
Lander County Hospital								
East Ely 1507—White Pine Co	Indus	Indus	40	23	7	No	M D	1909
Stanton Valley Hospital								
Elko 3917—Elko Co	Gen	County	70	23	4	No	R N	1911
Fiko General Hospital								
Fly 304—White Pine Co	Gen	County	43	13	4	No	R N	1900
White Pine County and								
General Ho pital								
Eureka 20—Eureka Co	Gen	County	1	5	No	M D	1888	
Eureka County Hospital								

NEVADA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinsets	Outpatient Dept	Supt M D R N Layman	Year Est
Goldfield 1308—Esmeralda Co	Indus	Indus	18	14	No	M D	1918	
Association Hospital								
Hawthorne 328—Mineral Co	Gen	County	14	9	No	M D	1883	
Mineral County Hospital								
Las Vegas 5163—Clark Co	Gen	Part	18	11	6	No	M D	1906
Ferguson Balcom Hospital								
Las Vegas Hospital	Gen	Indiv	20	6	6	No	M D	1908
Pyramid 42—Washoe Co	TB	Indian	43	30	Yes	M D	1923	
Pyramid Lake Indian Sana								
torium								
Reno 18320—Washoe Co	N C M	State	300	259	No	M D	1882	
Nevada State Hospital for								
Mental Diseases								
St Mary's Hospital	Gen	Church	57	31	5	No	R N	1907
Washoe County Hospital	Gen	County	110	110	4	No	M D	1910
Stewart 412—Ormsby Co	Gen	Indian	28	24	No	Lay	1916	
Carson Indian Hospital								
Tonopah 4144—Nye Co	Gen	County	36	22	2	No	M D	1902
Nye County Hospital								
Tonopah Mines Hospital	Indus	Indus	22	7	2	Yes	M D	1914
Winnemucca 1989—Humboldt Co	Gen	County	33	16	3	No	R N	1903
Humboldt County Hosp								

Related Institutions

Battle Mountain 1120—Lander Co	Gen	County	8	2	2	No	M D	1917
Battle Mountain Gen Hos								
Carson City 1596—Ormsby Co	Inst l	State	12	2	No	Lay	1810	
Nevada State Orphans								
Home								
Pioche 513—Lincoln Co	Indus	Indiv	9	5	No	M D	1929	
Pioche Hospital								
Stewart 412—Ormsby Co	Inst l	Indian	30	20	No	Lay	1891	
Carson Indian School Hos								
Virginia City 1200—Storey Co	Inst l	County	6	6	No	M D		
Storey County Hospital								
Yerington 1005—Lyon Co	Gen	County	14	7	No	M D	1922	
Lyon County Hospital								

Summary for Nevada

	Number	Beds	Patients	Basinsets
Hospitals and sanatoriums	17	83	637	40
Related institutions	6	79	42	-
Totals	23	911	679	42
Refused registration	1	20		

NEW HAMPSHIRE

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinsets	Outpatient Dept	Supt M D R N Layman	Year Est
Berlin 20018—Coos Co	Gen	Church	75	40	8	Yes	R N	1900
St Louis Hospital								
Brentwood 725—Rockingham Co	Gen	County	50	33	2	No	Lay	1912
Rockingham County Hosp								
Claremont 1237—Sullivan Co	Gen	Indep	60	33	10	Yes	R N	1886
Claremont General Ho p								
Concord 2002—Merrimack Co	Gen	Indep	123	51	15	No	R N	1883
Margaret Pillsbury General								
Hospital								
New Hampshire Mem Hosp	Gen	Indep	56	30	19	No	R N	1893
for Women & Children								
New Hampshire State Hos	N C M	State	1 720	1 690	No	M D	1849	
pital								
Dover 13713—Strafford Co	Gen	Indep	18	12	7	No	Lay	1899
Hayes Hospital								
Wentworth Hospital	Gen	City	75	37	11	No	R N	1909
Exeter 4872—Rockingham Co	Gen	Indep	40	24	13	Yes	R N	1881
Exeter Hospital								
Franklin 606—Merrimack Co	Gen	Indep	33	16	9	No	R N	1910
Franklin Ho pital								
Clarendon 50—Grafton Co	TB	State	110	91	No	M D	1909	
New Hampshire State Sana								
torium for the Treatment								
of Tuberculosis								
Cramere 200—Hillborough Co	Gen	County	100	101	5	Yes	R N	1910
Hillborough Co Ho p								
Hanover 2043—Grafton Co	Gen	Indep	176	69	14	Yes	Lay	1890
Mary Hitchcock Memorial								
Ho pital								
Keene 13794—Che hre Co	Gen	Indep	70	60	12	Yes	R N	1881
Lilliot Community Hosp								
Laconia 1241—Belknap Co	Gen	Indep	2	2	10	Yes	R N	1881
Laconia Hospital	Gen	Indep	50	12	No	M D	1901	
Laconia State School								
Lancaster 200—Coos Co	Gen	City	13	10	4	No	Lay	1919
Lancaster Ho pital								
Littleton 400—Crafton Co	Gen	Indep	2	2	6	No	R N	1900
Littleton Ho pital								
Manche 1004—Hillborough Co	Gen	City	70	30	10	Yes	R N	1911
Manche Ho pital								
Lilliot Ho pital	Gen	Indep	1	1	1	No	R N	1911
Ho pital Notre Dame D								
Lourde	Gen	Church	5	4	1	Yes	Lay	1911
Judy Hastings Ho pital	Gen	Indep	2	2	0	No	R N	1911
Our Lady of Perpetual	Mater	Church	22	5	14	No	R N	1911
Help Ho pital								
Sacred Heart Ho pital	Gen	Church	8	6	0	No	Lay	1911
Na hua 1140—Hillborough Co	Gen	Indep	70	40	10	No	R N	1911
Na hua Memorial Ho p								
St Eph Ho pital	Gen	Indep	1	1	1	No	R N	1911

Key to symbols and abbreviations is on page 1023

NEW HAMPSHIRE—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Baseline	Output	Sent I D R Laymen	Year
New London 812—Merrimack Co Hospital	Gen	Indep	10	6	5	No	R N	1910
New London Hospital								
Newport 4 650—Sullivan Co			20	7	5	No	R N	1910
Carrle T Wright Memorial Hospital	Gen	Indep	27	12	6	No	Lay	1911
North Conway 92—Carroll Co Memorial Hospital	Gen	Indep	9.	75	No	R N	1900	
Pembroke 2 792—Merrimack Co Pembroke Sanatorium	TB	Indiv	21	13	6	Yes	R N	1910
Peterboro 2 321—Hillsborough Co Peterboro Hospital	Gen	Indep						
Plymouth 2 4 0—Grafton Co Emily Balch Soldiers and Sailors Memorial Hosp	Gen	Indep	30	12	3	No	Lay	1920
Portsmouth 14 49.—Rockingham Co Portsmouth Hospital	Gen	Indep	64 202	40 93	16	No	R N M D	1887 1913
U S Naval Hospital	Gen	Navy						
Rochester 10 209—Strafford Co Frisbie Memorial Hospital	Gen	Indep	2.	22	8	No	R V	1919
Whitefield 1 693—Coos Co Morrison Hospital	Gen	Indep	50	26	1.	Yes	Lay	1902
Wolfeboro 2 3.—Carroll Co Huggins Hospital	Gen	Indep	2.	21	6	No	R N	1907
Woodsville 1 2.—Grafton Co Woodville Hospital	Gen	Indep	2,	17	7	No	R N	1903

Related Institutions

Related Institutions		No	MD	1892
Ashuelot 475—Cheshire Co	Conv	Indiv	10	
Fairlawn Rest Home			6	18
Concord 228—Merrimack Co	Inst	Indep	40	10
Armour Mem Infirmary			28	2
Exeter 4872—Rockingham Co	Inst	Indep	25	2
Lamont Infirmary			10	6
Haverhill 366—Grafton Co	Inst	County	61	4
Grafton County Hospital			20	5
Lincoln 1048—Grafton Co	Indus	Indus	43	42
Lincoln Hospital			40	2
Manchester 7684—Hillsborough Co		City		
Manchester Isolation Hosp	100	State		
Manchester Industrial School	Inst			
Portsmouth 1440—Rockingham Co				
Mark H Wentworth Home	Incur	Indep		
for Chron C Invalids				
Tilton 1712—Belknap Co				
New Hampshire Soldiers	Inst	State		
Home				

Home
Summary for New Hampshire N

Summary for New Hampshire	Number	Beds	Patients	Dresses
Hospitals and sanatoriums	38	4 416	3 009	394
Related institutions	9	317	125	2
	47	4 733 2,	3 684	396

Totals
Refused registration

NEW JERSEY

Hospitals and Sanatoriums	Type of Service	Control
1	2	3

Altenwood 166—Monmouth Co			90	80	No	RN	1921
Allenwood Sannt and Monmouth County Hospital for Tuberculosis	TB	County	52	30	12	No	RN 1913
Arlington 12 020—Hudson Co	Gen	Indep	235	193	40	Yes	RN 1897
West Hudson Hospital	Co	Indep	310	200		No	MD 1872
Atlantic City 66 108—Atlantic Co	Cen	Indep	170	110	36	Yes	Lay 1889
Atlantic City 66 108—Atlantic Co	Ortho	Indep	24	16	6	No	MD 1912
Children's Seashore House	Gen	Indep	250	137		No	MD 1903
Bayonne 88 975—Hudson Co	Gen	Indiv	30	25	8	Yes	RN 1927
Bayonne Hospital and Dispensary*	Gen	Indiv	80	49	16	No	RN 1893
Swine Sanatorium	N&M	County	200	180		No	Lay 1900
Belleville 26 974—1 sex Co	TB	Indep	48	41		No	MD 1911
Essex County Hospital for Contagious Diseases	Gen	Part	25	20	12	No	RN 1921
Boundbrook 7 872—Somerset Co	Cen	Indep	276	233	50	Yes	RN 1883
Boundbrook Hospital	Gen	Indep	232	130	35	Yes	RN 1891
Bridgeton 15 679—Cumberland Co	Gen	Indep	2 360	2 140	2	Yes	MD 1881
Bridgeton Hospital	N&M	County	20	15		No	MD 1911
Cumberland County Hospital for Insane	TB	Indiv	70	31	11	No	RN 1911
Browns Mills 313—Burlington Co	Gen	Indep	90	70	20	No	Lay 1911
Deborah Tuberc Sanat	Gen	Church	180	130		Yes	RN 1911
Camden 118 700—Camden Co	Gen	Indep	196	104	34	Yes	Lay 1911
Bellvue Private Hospital	Gen	Church	220	175	40	Yes	Lay 1911
Cooper Hospital	Gen	Church					
West Jersey Homeopathic Hospital*	Gen	Church					
Cedar Grove 3 900—Essex Co	N&M	County					
Essex County Hospital	N&M	County					
Crabruhr 56—Middlesex Co	N&M	County					
Crabruhr Lake Sanitarium	Gen	Indep					
Bralner 10 671—Morris Co	Gen	Indep					
Dover General Hospital	Gen	Indep					
East Orange 68 020—Essex Co	Gen	Indep					
Homeopathic Hospital	Gen	Church					
Flineth 114 880—Union Co	Gen	Church					
Alexian Brothers Hosp*	Gen	Church					
Elizabeth General Hospital	Gen	Church					
and Di pen ary*	Gen	Church					
St Elizabeth Hospital*	Gen	Church					

Key to symbols and

NEW JERSEY—Continued										
Hospitals and Sanatoriums			Type of Service	Control	Beds	Average Patients	Inasients	Outpatient Dept	Supt. R.N. Laysman	Year Est
Langewood 1780—Bergen Co	Gen	Indep	200	130	40	Yes	R.N.	1853		
Langewood Hospital	Gen	Army	50	10		Yes	M.D.	1890		
Fl Hancock—Monmouth Co	Gen	Army	50	10		Yes	M.D.	1890		
Franklin 4176—Sussex Co	Indus	Indus	30	19	6	Yes	M.D.	1905		
Franklin Hospital	Indus	Indus	30	19	6	Yes	M.D.	1905		
Glen Gardner 551—Hunterdon Co	TB	State	417	406		Yes	M.D.	1907		
New Jersey Sanatorium for Tuberculous Diseases	TB	State	417	406		No	Lay	1889		
Greenloch 25—Camden Co	Gen	County	150	133	4	No	R.N.	1877		
Camden Co General Hosp	N&M	County	212	215		No	M.D.	1914		
Camden County Hospital	TB	County	212	215		Yes	M.D.	1876		
For Mental Diseases	N&M	State	4 019	3 743		Yes	R.N.	1883		
Lakeland Sanatorium	N&M	State	4 019	3 743		Yes	R.N.	1883		
Greystone Park—Morris Co	N&M	State	4 019	3 743		Yes	R.N.	1883		
New Jersey State Hosp	N&M	State	4 019	3 743		Yes	R.N.	1883		
Hackensack 2456—Bergen Co	Gen	Indep	225	160	30	Yes	R.N.	1883		
Hackensack Hospital	Gen	Indep	225	160	30	Yes	R.N.	1883		
Hoboken 5991—Hudson Co	Gen	Indep	413	252	12	Yes	Lay	1863		
Farr Sanatorium	Gen	Church	413	252	12	Yes	Lay	1863		
St Mary Hospital	Gen	Church	413	252	12	Yes	Lay	1863		
Irrington 5674—Lex Co	Gen	City	79	50	17	Yes	R.N.	1914		
Irrington General Hosp	Gen	City	79	50	17	Yes	Lay	1873		
Jersey City 316710—Hudson Co	Gen	Church	207	118	14	Yes	Lay	1873		
Christ Hospital	Gen	Indep	70	50	20	No	R.N.	1911		
Laumont Surgical Sanat	Gen	Indep	60	54	12	Yes	R.N.	1917		
Greenfield Hospital	Gen	Indep	20	10	8	No	Lay	1917		
Hilltop Sanatorium	Gen	City	5401	617	60	Yes	M.D.	1863		
Jersey City Hospital	Gen	Church	238	190	12	Yes	Lay	1864		
St Francis Hospital	Gen	Church	238	190	12	Yes	Lay	1864		
Inkwood 189—Ocean Co	Gen	Indep	60	35	9	No	R.N.	1911		
Paul Kimball Hospital	Gen	Indep	60	35	9	Yes	M.D.	1890		
Long Branch 18399—Monmouth Co	Gen	Indep	85	72	20	Yes	R.N.	1889		
Dr J C Hazard Hospital	Gen	Indep	85	72	20	Yes	R.N.	1889		
Monmouth Mem Hosp	Gen	Indep	85	72	20	Yes	M.D.	1918		
Metuchen 5743—Middlesex Co	Gen	Army	10	5		Yes	M.D.	1918		
Metuchen Hospital	Gen	Army	10	5		Yes	M.D.	1918		
Midland Park J.C.S.—Bergen Co	N&M	Indep	140	87		No	Lay	1911		
Christian Sanatorium	N&M	Indep	140	87		No	Lay	1911		
Millsville 1170—Cumberland Co	Gen	Indep	35	27	5	No	R.N.	1915		
Millsville Hospital	Gen	Indep	35	27	5	No	R.N.	1915		
Montclair 42017—Lex Co	Gen	Indep	214	168	34	Yes	R.N.	1890		
Mountainside Hospital	Gen	Indep	214	168	34	Yes	R.N.	1890		
St Vincent's Nursery and Babies Hospital	Mater	Church	39	14	11	Yes	Lay	1890		
Morrisstown 15197—Morris Co	Gen	Church	125	75	44	No	R.N.	1891		
All Souls Hospital	Gen	Church	125	75	44	Yes	Lay	1892		
Morrisstown Mem Hosp	Gen	Indep	150	60		No	M.D.	1900		
Physiatric Institute	Metab	Indep	50	45		No	R.N.	1912		
Shongum Sanatorium	TB	County	50	45		No	R.N.	1912		
Mt Holly 5762—Burlington Co	Gen	County	99	72	17	Yes	R.N.	1880		
Burlington County Hosp	Gen	County	99	72	17	Yes	R.N.	1880		
Newark 42237—Lex Co	Chil	Indep	60	45		Yes	R.N.	1896		
Hobbs Hospital	Chil	Indep	60	45		Yes	R.N.	1896		
Hospital and Home for Crippled Children	Ortho	Indep	125	91	3	Yes	R.N.	1892		
Hospital for Women and Children	Gen	Indep	95	45	42	Yes	R.N.	1880		
Hosp of St Barnabas	Gen	Church	120	107	18	Yes	Lay	1866		
Kenney Mem Hosp (col)	Gen	Indiv	26	9	4	No	M.D.	1927		
Lincoln Hospital	Gen	Indep	45	15	20	No	Lay	1900		
Newark Beth Israel Hos	Gen	Indep	334	278	42	Yes	M.D.	1906		
plital	Gen	City	639	616	41	No	M.D.	1882		
Newark City Hospital	ELNT	Indep	63	40		Yes	Lay	1880		
Newark Eye & Ear Infirm	ELNT	Indep	63	40		Yes	Lay	1880		
Newark Maternity Hospital	Mater	Indep	34	29	34	Yes	Lay	1912		
and Dispensary	Mater	Indep	34	29	34	Yes	Lay	1912		
Newark Memorial Hosp	Gen	Church	212	131	53	Yes	R.N.	1912		
Presbyterian Hospital	Gen	Church	107	91	18	Yes	R.N.	1900		
St James Hospital	Gen	Church	300	226		Yes	Lay	1867		
St Michael's Sanitarium	Gen	Church	300	226		Yes	Lay	1867		
Dr Wright's Sanitarium	Gen	Indiv	22	6	6	No	M.D.	1901		
and Mater Home (col)	Gen	Indiv	22	6	6	No	M.D.	1901		
New Brunswick 34555—Middlesex Co	Gen	Indep	90	65	20	Yes	R.N.	1884		
Middlesex General Hosp	Gen	Church	125	75	25	Yes	Lay	1907		
St Peter's General Hosp	Gen	Church	125	75	25	Yes	Lay	1907		
New Lisbon 171—Burlington Co	N&M	County	275	225		No	Lay	1901		
Burlington County Hospi	N&M	County	275	225		No	Lay	1901		
tal for the Insane	TB	County	123	120		No	R.N.	1918		
Fairview Sanatorium	N&M	County	123	120		No	R.N.	1918		
State Colony for Feeble Minded Males	FeMI	State	550	550		No	Lay	1916		
Northfield 2804—Atlantic Co	N&M	County	450	221		No	M.D.	1895		
Atlantic County Hospital	N&M	County	450	221		No	M.D.	1895		
for Mental Diseases	N&M	County	450	221		No	M.D.	1895		
Atlantic County Hospital	TB	County	50	43		Yes	Lay	1916		
for Tuberculous Diseases	TB	County	50	43		Yes	Lay	1916		
Oceanport 1872—Monmouth Co	Gen	Army	35	23		No	M.D.	1917		
Station Hospital	Gen	Army	35	23		No	M.D.	1917		
Orange 3399—Lex Co	Ortho	Indep	85	70		Yes	R.N.	1903		
New Jersey Ortho Hospital	Ortho	Indep	85	70		Yes	R.N.	1903		
and Dispensary	Gen	Church	126	96	25	Yes	R.N.	1906		
Orange Memorial Hosp	Gen	Church	126	96	25	Yes	R.N.	1906		
St Mary's Hospital	Gen	Indep	100	38	36	No	Lay	1906		
Passaic 6250—Passaic Co	Gen	Indep	200	124	25	Yes	Lay	1892		
Beth Israel Hospital	Gen	Church	205	144	20	Yes	Lay	1885		
Passaic General Hospital	Gen	Church	205	144	20	Yes	Lay	1885		
St Mary's Hospital	Gen	Church	205	144	20	Yes	Lay	1885		
Pateron 138513—Passaic Co	Gen	Indep	98	76	12	Yes	Lay	1910		
Nathan and Miriam Barnet	Gen	Indep	110	64		No	Lay	1896		
Memorial Hospital	TB	City	261	150	47	Yes	Lay	1872		
Paterson City Hospital	Gen	Indiv	60	15		No	M.D.	1890		
Paterson General Hosp	Gen	Indiv	60	15		No	M.D.	1890		
Riverlawn Sanatorium	N&M	Church	355	185	45	Yes	M.D.	1863		
St Joseph's Hospital	TB	Church	205	92		Yes	M.D.	1920		
Valley View Sanatorium	TB	Church	205	92		Yes	M.D.	1920		

Key to symbols and abbreviations is on page 1023

NEW JERSEY—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinsets	Outpatient Dept	Supt M D R N	Year Est
Perth Amboy 43 516—Middlesex Co	Gen	Indep	136	84	18	No	R N	1889
Perth Amboy City Hosp • Gen	Gen	Indep	75	30	20	No	Lay	1923
Phillipsburg 19 700—Warren Co	Gen	Indep	240	150	35	Yes	R N	1877
Warren Hospital • Gen	Gen	Indep	30	18	4	Yes	M D	1920
Plainfield 34 423—Union Co	Gen	Indep	50	15		Yes	Lay	1922
Muhlenberg Hospital • Gen	Gen	Indep	58	30	12	Yes	R N	1919
Point Pleasant 2 035—Ocean Co	Gen	Indep	100	43	20	No	Lay	1915
Point Pleasant Hospital • Gen	Gen	Indep	30	20	8	No	R N	1928
Pompton Lakes 8 104—Passaic Co	Gen	Church	302	172		Yes	M D	1916
St Paul's Deaconess Home and Hospital	Gen	Church	50	15		Yes	Lay	1922
Princeton 6 932—Mercer Co	Gen	Indep	58	30	12	Yes	R N	1919
Princeton Hospital • Gen	Gen	Indep	100	43	20	No	Lay	1915
Rahway 16 011—Union Co	Gen	Indep	30	20	8	No	R N	1928
Rahway Memorial Hospital • Gen	Gen	Indep	30	20	8	No	R N	1928
Red Bank 11 672—Monmouth Co	Gen	Indep	30	20	8	No	R N	1928
Ridgewood 12 188—Bergen Co	Gen	Indep	30	20	8	No	R N	1928
Ridgewood 12 188—Bergen Co	Gen	Indep	30	20	8	No	R N	1928
Riverside 4 010—Burlington Co	Gen	Indep	12	4	6	Yes	R N	1913
Salem 8 047—Salem Co	Gen	Indep	43	20	9	Yes	Lay	1919
Salem County Mem Hosp	Gen	Indep	43	20	9	Yes	Lay	1919
Scotch Plains 1 010—Union Co	Gen	Indep	43	20	9	Yes	Lay	1919
Secaucus 5 930—Hudson Co	Gen	Indep	43	20	9	Yes	Lay	1919
Hudson County Hospital • Gen	Gen	Indep	43	20	9	Yes	Lay	1919
Hudson County Hospital • Gen	Gen	Indep	43	20	9	Yes	Lay	1919
Hudson County Tuberculosis Hospital and Sanat	Gen	Indep	43	20	9	Yes	Lay	1919
Skillman 7 000—Somerset Co	Gen	Indep	43	20	9	Yes	Lay	1919
New Jersey State Village for Epileptics • Gen	Gen	Indep	43	20	9	Yes	Lay	1919
Somers Point 2 073—Atlantic Co	Gen	Indep	43	20	9	Yes	Lay	1919
Atlantic Shore Sanitarium and Hospital	Gen	Indep	43	20	9	Yes	Lay	1919
Somerville 8 200—Somerset Co	Gen	Indep	43	20	9	Yes	Lay	1919
Somerset Hospital • Gen	Gen	Indep	43	20	9	Yes	Lay	1919
South Amboy 8 476—Middlesex Co	Gen	Indep	43	20	9	Yes	Lay	1919
South Amboy Mem Hosp	Gen	Indep	43	20	9	Yes	Lay	1919
Spring Lake Beach 1 720—Monmouth Co	Gen	Indep	43	20	9	Yes	Lay	1919
Ann May Memorial Homeopathic Hospital • Gen	Gen	Indep	43	20	9	Yes	Lay	1919
Summit 14 506—Union Co	Gen	Indep	43	20	9	Yes	Lay	1919
Fair Oaks Sanatorium	Gen	Indep	43	20	9	Yes	Lay	1919
Overlook Hospital • Gen	Gen	Indep	43	20	9	Yes	Lay	1919
Sussex 1 410—Sussex Co	Gen	Indep	43	20	9	Yes	Lay	1919
Alexander Linn Hospital	Gen	Indep	43	20	9	Yes	Lay	1919
Tenack 3 260—Bergen Co	Gen	Indep	43	20	9	Yes	Lay	1919
Holy Name Hospital • Gen	Gen	Indep	43	20	9	Yes	Lay	1919
Trenton 193 356—Mercer Co	Gen	Indep	43	20	9	Yes	Lay	1919
Chambersburg Gen Hosp	Gen	Indep	43	20	9	Yes	Lay	1919
Mercer Hospital • Gen	Gen	Indep	43	20	9	Yes	Lay	1919
Municipal Colony • Gen	Gen	Indep	43	20	9	Yes	Lay	1919
New Jersey State Hosp • Gen	Gen	Indep	43	20	9	Yes	Lay	1919
Orthopaedic Hospital and Dispensary	Gen	Indep	43	20	9	Yes	Lay	1919
St Francis Hospital • Gen	Gen	Indep	43	20	9	Yes	Lay	1919
William McKinley Memorial Hospital • Gen	Gen	Indep	43	20	9	Yes	Lay	1919
Union City 58 659—Hudson Co	Gen	Indep	43	20	9	Yes	Lay	1919
Hamilton Sanitarium	Gen	Indep	43	20	9	Yes	Lay	1919
Vernon 7 161—Essex Co	Gen	Indep	43	20	9	Yes	Lay	1919
Essex Mountain Sanat • TB	Gen	Indep	43	20	9	Yes	Lay	1919
Vineland 7 560—Cumberland Co	Gen	Indep	43	20	9	Yes	Lay	1919
Newcomb Hospital • Gen	Gen	Indep	43	20	9	Yes	Lay	1919
Vineland State School • TB	Gen	Indep	43	20	9	Yes	Lay	1919
Weehawken 14 455—Hudson Co	Gen	Indep	43	20	9	Yes	Lay	1919
North Hudson Hospital • Gen	Gen	Indep	43	20	9	Yes	Lay	1919
Woodbine 2 164—Cape May Co	Gen	Indep	43	20	9	Yes	Lay	1919
Woodbine Colony for Feeble minded Males	Gen	Indep	43	20	9	Yes	Lay	1919
Woodbury 8 172—Gloucester Co	Gen	Indep	43	20	9	Yes	Lay	1919
Brewer Hospital • Gen	Gen	Indep	43	20	9	Yes	Lay	1919
Underwood Private Hosp	Gen	Indep	43	20	9	Yes	Lay	1919

Related Institutions

Atlantic City 66 198—Atlantic Co							
Atlantic Nose and Throat Hospital	Conv	Indiv	10	2	No	R N	1920
Galen Hall	Conv	Indep	183	109	No	Lay	1890
Dr Leonard's Private Sanatorium	Al & Dr	Indiv	20	14	No	M D	1911
Municipal Hospital	Iso Sh & Cu	City	62	10	Yes	Lay	1909
Bridgeton 15 699—Cumberland Co							
Ivy Hall Sanitarium	Conv	Indiv	50	30	No	M D	1917
Burlington 10 844—Burlington Co	Inst 1	Frat	30	32	No	Lay	1898
Masonic Home							
Caldwell 5 144—Essex Co							
There a Grotto Home for Convalescents	Conv	Indep	40	30	No	Lay	1923
Camden 118 700—Camden Co							
Municipal Hospital for Contagious Diseases	Iso	City	110	21	No	M D	1916
Chatsworth 962—Burlington Co							
The Pines	TB	Indiv	30	5	No	M D	1921
Farmingdale 620—Monmouth Co							
Tuberculosis Preventorium for Children	TB	Indep	210	10	No	R N	1909
Haddonfield 8 870—Camden Co							
Bancroft School	Men Def	Indep	110	104	No	M D	1850
Jamesburg 2 018—Middlesex Co							
New Jersey State Home for Boys	Inst 1	State	13	11	Yes	Lay	1890

NEW JERSEY—Continued

Related Institutions	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt M D R N	Year Est
Jersey City 316 715—Hudson Co	EENT	Indiv	10	5	Yes	R N	1924	
Jersey Eye Ear Nose and Throat Hospital								
Salvation Army Door of Hope Hospital	Mater	Church	53	5	10	No	Lay	1920
Kearny 40 716—Hudson Co	Inst l	State	50	40	No	Lay	1866	
New Jersey Home for Disabled Soldiers								
Longport 228—Atlantic Co	Ortho	Frat	120	47	No	R N	1924	
Betty Bacharach Home for Afflicted Children								
Manasquan 2 320—Monmouth Co	Conv	Indep	60	25	No	Lay	1910	
Margaret & Sarah Switzer Foundation for Girls								
Morristown 1 197—Morris Co	Conv	Indep	100	50	No	M D	1920	
Aurora Health Farm								
Newark 412 337—Essex Co	Incur	Indep	63	60	No	Lay	1883	
Home for Incurables and Hospital								
Newark City Almshouse	Inst l	City	40	20	Yes	Lay	1838	
Newark Convalescent Hosp	Conv	City	153	151	No	M D	1926	
New Brunswick 34 556—Middlesex Co	Conv	Indiv	28	25	No	Lay	1907	
Francis E Parker Memorial Home								
Newfoundland 564—Morris Co	Conv	Indep	35	20	No	M D	1902	
Newfoundland Health Assn								
Northfield 9 804—Atlantic Co	Inst l	County	135	90	No	M D	1875	
Atlantic Co Gen Hosp								
Ocean City 174—Cape May Co	Chil	Indep	40	16	No	Lay	1922	
Ocean City Seashore Home for Babies								
Ocean Grove 3 000—Monmouth Co	Inst l	Church	10	9	No	Lay	1907	
M J Home for Aged								
Passaic 62 939—Passaic Co	EENT	Indiv	32	11	5	Yes	M D	1912
Passaic Eye Ear Nose and Throat Private Hospital								
Passaic Municipal Hospital	Iso	City	24	2	No	M D	1904	
Princeton 6 992—Mercer Co	Inst l	Indep	54	19	Yes	R N	1892	
Isabella McCosh Infirmary								
Rahway 16 011—Union Co	Inst l	State	10	4	No	M D	1901	
New Jersey Reformatory Hospital								
Roseland 1 008—Essex Co	M & M	Part	19	14	No	R N	1927	
Mountain View Rest								
Sea Isle City 800—Cape May Co	Conv	Part	30	18	6	No	Lay	1920
Sea Isle City Hospital and Home								
Secaucus 8 930—Hudson Co	Iso	County	50		No	Lay	1873	
Hudson County Smallpox Hospital								
Tenack 3 260—Bergen Co	Incur	Indiv	30	19	No	Lay	1916	
Bright Side Sanitarium								
Toms River 1 800—Ocean Co	Conv	Indep	18	16	No	R N	1923	
Toms River Home								
Frenton 123 356—Mercer Co	Inst l	State	20	5	No	Lay	1897	
New Jersey School for the Deaf								
New Jersey State Prison	Inst l	State	4	20	Yes	M D	181	
Hospital								
State Home for Girls	Inst l	State	52	8	No	M D	1871	
Ventnor 6 604—Atlantic Co	Conv	Indep	76	40	14	No	Lay	1812
Jewish Seaside Home for Invalids								
Vineland 7 556—Cumberland Co	Inst l	State	60	40	No	Lay	1890	
New Jersey Memorial Home for Disabled Soldiers								
Sailors' Marines and their Wives	Men	Def Indep	31	10	No	Lay	1855	
Training School at Vineland	Gen	Indiv	20	6	No	M D	1917	
Wildwood 5 000—Cape May Co								
Margaret Mace's Hospital								

Summary for New Jersey

	Number	Beds	Patients	Basinsets
Hotels and sanatoriums	12	31 061	1 018	1 771
Related institutions	41	2 441	1 141	41
Totals	168	33 502	2 159	1 812
Refused registration	8	200		3

NEW MEXICO

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinsets	Outpatient Dept	Supt M D R N	Year Est
Albuquerque 20 570—Bernalillo Co	Gen	Indep	50	30	No	M D	1911	
Albuquerque Sanatorium	Gen	Indep	50	30	No	M D	1911	
Albuquerque Eye Ear Nose and Throat Hospital	Gen	Indep	50	30	No	M D	1911	
Children's Home and Hospital	Gen	Indep	50	30	No	M D	1911	
Hillier Sanatorium	Gen	Indep	50	30	No	M D	1911	
Methodist Deaconess Sanatorium	Gen	Indep	50	30	No	M D	1911	
St. Joseph's Sanatorium	Gen	Indep	50	30	No	M D	1911	
Southwestern Presbyterian Sanatorium	Gen	Indep	50	30	No	M D	1911	
U S Indian Service Hospital	Gen	Indep	50	30	No	M D	1911	
Black Rock (Zuni P O)—McKinley Co	Gen	Indep	50	30	No	M D	1911	
Black Rock Sanatorium	Gen	Indep	50	30	No	M D	1911	
Carlsbad 7 000—El Paso Co	Gen	Indep	50	30	No	M D	1911	
St. Francis Hospital	Gen	Indep	50	30	No	M D	1911	
Clayton 1 000—Union Co	Gen	Indep	50	30	No	M D	1911	
St. Joseph's Hospital	Gen	Indep	50	30	No	M D	1911	

NEW MEXICO—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Bassinets	Outpatient Dept	Supt. M D	R N Layman	Year Est
Clover 8027—Curry Co	Indus	Indus	32	17	1	Yes	M D	1911	
A T & S F Hospital	Gen	Church	22	11	6	No	Lay	1920	
Baptist Hospital	Gen	Church	37	22	5	Yes	I ay	1910	
Crownpoint 62—McKinley Co	Gen	Indian	37	22	5	Yes	I ay	1910	
Eastern Navajo Agency Hospital	Gen	Indian	37	22	5	Yes	I ay	1910	
Dawson 2063—Colfax Co	Indus	Indus	30	7	3	No	M D	1904	
Philips Dodge Corp Hosp	Indus	Indus	30	7	3	No	M D	1904	
Deming 1377—Juna Co	Gen	Indep	24	6	4	No	I ay	1900	
Deming Ladies Hospital	IB	Church	200	50	No	I ay	1923		
Holy Cross Sanatorium	Gen	Indian	24	15	1	Yes	R N	1917	
Duke 101—Rio Arriba Co	Gen	Indian	24	15	1	Yes	R N	1917	
Jicarilla Agency Hospital	TB	Indian	80	80	1	Yes	M D	1902	
Jicarilla Southern Mountain Sanatorium	Indus	Indus	30	7	3	No	M D	1904	
Farlington 1350—San Juan Co	Indus	Indus	30	7	3	No	M D	1904	
San Juan Episcopal Mission Hospital	Indus	Indus	30	7	3	No	M D	1904	
San Juan Hospital	Gen	Church	16	9	1	Yes	R N	1922	
St Bayard 800—Grant Co	Gen	Indep	1	6	2	No	M D	1910	
U S Veterans Hospital	PB	VetBur	430	367	No	M D	1920		
Ft Stanton 218—Lincoln Co	TB	USI H	240	237	No	M D	1899		
U S Marine Hospital	Gen	Church	7	20	7	No	I ay	1918	
Gallup 5092—McKinley Co	Gen	Church	7	20	7	No	I ay	1918	
St Mary's Hospital	Indus	Indus	40	12	1	Yes	M D	1900	
Gardner 1000—Colfax Co	Indus	Indus	40	12	1	Yes	M D	1900	
Gardiner Hospital	Indus	Indus	40	12	1	Yes	M D	1900	
Laguna 1091—Valencia Co	TB	Indian	60	48	No	M D	1900		
Laguna Sanat. for Tuberc	Gen	Indep	21	7	4	No	R N	1884	
Las Vegas 4719—San Miguel Co	Gen	Indep	21	7	4	No	R N	1884	
Carpenter Memorial Hosp	N & M	State	711	605	No	M D	1831		
New Mexico Insane Asylum	Gen	Church	27	11	6	No	I ay	1896	
St Anthony's Sanitarium and Hospital	Gen	Church	27	11	6	No	I ay	1896	
Lordsburg 2069—Hidalgo Co	Gen	Indiv	11	5	2	Yes	M D	1912	
Da Moss Hospital	Gen	Indep	10	7	4	No	M D	1910	
Lordsburg Hospital	Gen	Indep	10	7	4	No	M D	1910	
Mescalero 175—Otero Co	TB	Indian	44	11	1	Yes	M D	1916	
Mescalero Indian Hosp	Gen	State	31	14	3	No	R N	1909	
Raton 6010—Colfax Co	Gen	State	31	14	3	No	R N	1909	
New Mexico Miners Hosp	Gen	Church	35	28	5	Yes	M D	1909	
Rehoboth 170—McKinley Co	Gen	Church	35	28	5	Yes	M D	1909	
Rehoboth Mission Hospital	Gen	Church	35	28	5	Yes	M D	1909	
Roswell 1173—Chaves Co	Gen	Church	60	17	8	No	R N	1901	
St Mary's Hospital	Gen	Indiv	15	5	No	M D	1916		
Roy 713—Harding Co	Gen	Indiv	15	5	No	M D	1916		
Plumlee Hospital	Gen	Indiv	15	5	No	M D	1916		
Santa Fe 1176—Santa Fe Co	Gen	Indian	70	20	1	Yes	M D	1896	
Lewis O Cramton Hospital	Gen	Church	85	30	8	No	Lay	1865	
St Vincent's Sanatorium and Hospital	Gen	Church	85	30	8	No	Lay	1865	
Sunmount Sanatorium	TB	Indep	52	40	No	M D	1905		
Santa Rita 1890—Grant Co	Indus	Indus	50	1	10	Yes	M D		
Nevada Consolidated Copper Company Hospital	Indus	Indus	50	1	10	Yes	M D		
Shiprock 161—San Juan Co	Gen	Indian	62	40	2	Yes	M D	1919	
San Juan Indian Hospital	Gen	Indian	62	40	2	Yes	M D	1919	
Silver City 3,310—Grant Co	Gen	Indep	23	9	6	No	R N	1886	
Grant County Hospital	Gen	Indep	23	9	6	No	R N	1886	
Valmora—Mora Co	TB	Indep	80	69	No	M D	1910		
Valmora Sanatorium	TB	Indep	80	69	No	M D	1910		

Related Institutions

Alamogordo 3096—Otero Co	Gen	Indiv	8	4	2	No	R N	1908	
Rousseau Hospital	Gen	Indiv	8	4	2	No	R N	1908	
Albuquerque 26570—Bernillo Co	Conv	Indiv	22	19	No	R N	1915		
Sunset Lodge	Conv	Indiv	22	19	No	R N	1915		
Carlsbad 3708—Jddy Co	Gen	County	17	8	No	Lay	1908		
Jddy County Hospital	Gen	County	17	8	No	Lay	1908		
Los Lunas 513—Valencia Co	MenDef	State	54	40	No	M D	1920		
New Mexico Home and Training School for Mental Defective	MenDef	State	54	40	No	M D	1920		
Santa Fe 1176—Santa Fe Co	Inst	State	100	10	No	Lay	1885		
New Mexico Penitentiary Hospital	Inst	State	100	10	No	Lay	1885		
Springer 957—Colfax Co	Gen	Indiv	5	2	No	I ay	1914		
Springer Hospital	Gen	Indiv	5	2	No	I ay	1914		
Valley Ranch 108—San Miguel Co	Conv	Indep	70	50	No	Lay	1913		
Valley Ranch	Conv	Indep	70	50	No	Lay	1913		

Summary for New Mexico

Hospitals and sanatoriums	Number	Beds	Patients	Bassinets
Related institutions	43	3 548	2 373	139
Totals	7	281	193	2
Refused registration	50	3 629	2 496	141
	2	58		6

NEW YORK

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Bassinets	Outpatient Dept	Supt. M D	R N Layman	Year Est
Albany 127412—Albany Co	Gen	Indep	575	379	40	Yes	M D	1849	
Albany Hospital**	Gen	Indep	575	379	40	Yes	M D	1849	
Anthony N Brady Mater nity Hospital	Mater	Church	60	50	60	Yes	R N	1915	
Child's Hospital	Chil	Church	45	36	No	Lay	1914		
Memorial Hospital**	Gen	Indep	125	108	17	Yes	Lay	1873	
St Peter's Hospital**	Gen	Church	14	92	Yes	Lay	1869		

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Bassinets	Outpatient Dept	Supt. M D	R N Layman	Year Est
Albion 1878—Orleans Co	Gen	Indep	21	11	12	No	R N	1916	
Arnold Gregory Memorial Hospital	Gen	Indep	21	11	12	No	R N	1916	
Amityville 4437—Suffolk Co	N & M	Indep	201	149	No	M D	1889		
Long Island Home	N & M	Indep	201	149	No	M D	1889		
Touken Knickerbocker Hall	N & M	Indep	140	124	No	M D	1886		
Dr Reed Private Hospital	Indiv	Indiv	14	9	3	Yes	M D	1923	
Amsterdam 21817—Montgomery Co	Gen	Indep	74	15	14	No	R N	1885	
Amsterdam City Hospital	IB	County	74	15	14	No	M D	1885	
Montgomery Sanatorium	Gen	Church	110	69	18	No	Lay	1903	
St Mary's Hospital	Gen	Church	110	69	18	No	Lay	1903	
Auburn 3642—Cayuga Co	Gen	Indep	133	88	22	Yes	Lay	1858	
Auburn City Hospital**	Gen	Church	22	19	No	R N	1917		
Mercy Hospital	Gen	Church	22	19	No	R N	1917		
Bailston Spa 4511—Saratoga Co	Gen	Indep	15	8	6	Yes	R N	1923	
Benedict Memorial Hosp	Gen	Indep	15	8	6	Yes	R N	1923	
Batavia 177—Cattaraugus Co	Gen	Church	59	40	13	No	Lay	1911	
St Jerome's Hospital	Gen	Church	59	40	13	No	Lay	1911	
Woman's Hospital	Gen	Indep	44	30	8	No	R N	1900	
Bath 101—Steuben Co	Gen	Indep	44	30	8	No	R N	1900	
Bath Hospital	Gen	Indep	44	30	8	No	R N	1900	
Ekasant Valley Sanat	IB	County	45	42	1	No	M D	1919	
Bay Shore 400—Suffolk Co	Gen	Indiv	70	18	8	Yes	R N	1915	
Dr King's Private Hosp	Gen	Indiv	70	18	8	Yes	R N	1915	
Southside Hospital	Gen	Indep	78	37	26	No	R N	1913	
Bacon 11073—Dutchess Co	N & M	Indep	75	73	No	M D	1915		
Cady House	N & M	Indep	75	73	No	M D	1915		
Holland Hospital	Gen	Indep	47	2	8	No	R N	1871	
Mattawan State Hosp	N & M	State	1 175	1 150	No	M D	1850		
Bedford Hills 1000—Westchester Co	Gen	Indep	220	222	No	M D	1907		
Montefiore Hospital	TB	Indep	220	222	No	M D	1907		
Brooklyn 7062—Broome Co	Gen	City	772	249	47	No	Lay	1893	
Brooklyn City Hospital**	Gen	City	772	249	47	No	Lay	1893	
Brooklyn State Hosp**	N & M	State	2 911	1 112	Yes	M D	1881		
Indicott Johnson Clinton Street Hospital	Indus	Indus	20	12	30	Yes	M D	1919	
Moore Overton Hospital	Gen	Indus	20	12	30	Yes	M D	1919	
Brantwood 734—Suffolk Co	N & M	Indep	30	20	1	No	M D	1893	
Ross Sanitarium	N & M	Indep	30	20	1	No	M D	1893	
Bronxville 67—Westchester Co	Gen	Indep	87	74	18	Yes	R N	1909	
Lawrence Hospital	Gen	Indep	87	74	18	Yes	R N	1909	
Brooklyn 2500401—Kings Co	Gen	Indep	78	45	70	No	Lay	1917	
Bay Ridge Sanitarium	Water	Indep	29	10	20	No	R N	1919	
Bedford Maternity	Water	Indep	24	15	24	No	M D	1914	
Bensonhurst Maternity	Water	Indep	24	15	24	No	M D	1914	
Bethany Deaconess Hosp	Gen	Church	80	30	20	No	Lay	1894	
Beth Moses Hospital*	Gen	Indep	107	16	10	Yes	M D	1910	
Borough Park Mater Hos	Water	Indiv	107	16	10	Yes	M D	1910	
Brooklyn Tye and Lar Hos	IB	NT	175	80	Yes	I ay	1868		
Brooklyn Hebrew Mater nity Hospital	Water	Indep	21	23	27	Yes	R N	1922	
Brooklyn Home for Consumptives	TB	Indep	116	103	No	R N	1881		
Brooklyn State Hospital**	Gen	Indep	260	295	34	Yes	M D	1914	
Brooklyn State Hospital**	N & M	State	1 315	1 491	Yes	M D	1914		
Brownsville and East New York Hospital*	Gen	Indep	196	185	48	Yes	I ay	1914	
Bushwick Hospital*	Gen	Indep	100	70	18	Yes	R N	1891	
Caledonian Hospital	Gen	Indep	100	52	50	No	R N	1909	
Carson O Peck Memorial Hospital	Gen	Indep	91	70	10	Yes	Lay	1919	
Coney Island Hospital*	Gen	City	300	182	30	Yes	M D	1910	
Crown Heights Hospital	Gen	Indep	122	100	25	No	R N	1925	
Cumberland Hospital*	Gen	City	293	250	31	Yes	M D	1897	
Evangelical Deacons' Hos	Gen	Church	20	15	12	No	Lay	1925	
Greenpoint Hospital*	Gen	City	258	184	42	Yes	M D	1913	
Harbor Hospital	Gen	Indep	60	30	10	Yes	I ay	1914	
Hosp of the Holy Family	Gen	Church	62	40	21	No	R N	1909	
House of St Giles the Crip	Ortho	Church	43	37	Yes	Lay	1891		
Jewish Hospital**	Gen	Indep	532	435	115	Yes	Lay	1906	
Kings County Hospital**	Gen	City	1 617	1 646	43	Yes	M D	1897	
Kingston Avenue Hospital*	Gen	City	460	109	No	M D	1889		
Liberty Maternity Hospital	Gen	Indiv	40	30	20	No	M D	1917	
Long Island College Hos	Gen	Indep	438	340	42	Yes	Lay	1888	
Lutheran Hospital	Gen	Church	92	58	17	Yes	R N	1881	
Mayflower Hospital	Gen	Part	22	18	10	No	Lay	1925	
Methodist Episcopal Hos	Gen	Church	33	20	63	Yes	R N	1881	
Midwood Sanitarium	Gen	Indep	55	35	27	No	R N	1909	
Norwegian Lutheran Dea coness Home & Hosp**	Gen	Church	170	141	32	Yes	Lay	1883	
Prospect Heights Hosp and Brooklyn Maternity*	Gen	Indep	148	73	42	No	R N	1971	
Ridgewood Sanitarium	Gen	Indep	15	10	12	No	R N	1914	
Riverdale Hospital	Gen	Indiv	50	20	36	No	M D	1906	
St Catherine's Hosp**	Gen	Church	252	212	44	Yes	R N	1880	
St Cecelia Maternity and Women's Hospital	Mater	Church	56	29	50	No	R N	1927	

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt R N	Year Est
Unity Hospital	Gen	Indep	176	94	31	Yes	R N	1915
Victory Memorial Hosp	Gen	Indep	26	18	13	No	R N	1927
Dr Wades Private Hosp	Gen	Indiv	50	21	10	No	M D	1918
Williamsburgh Maternity	Water	Indep	75	40	62	No	M D	1918
Wyckoff Heights Hosp	Gen	Indep	170	136	30	Yes	Lay	1889
Buffalo 530 6—Frie Co	Gen	City	82.1	910	38	Yes	M D	1917
Buffalo City Hospital	Gen	Indep	73	6	6	Yes	M D	1908
Buffalo Columbus Hosp	Gen	Indep	374	28	26	Yes	M D	1835
Buffalo General Hosp	Gen	Church	215	142	21	Yes	R N	1849
Buffalo Hosp of the Sis	Gen	State	224	54	1	Yes	M D	1850
Buffalo State Hospital	N & M	State	62	48	5	No	Lay	1929
Central Park Clinic	Gen	Indep	211	120	39	Yes	R N	1892
Childrens Hospital	Chil	Indep	184	14	43	No	Lay	1896
Deaconess Hospital	Gen	Indep	100	7.5	7	Yes	R N	1902
Emergency Hosp of the Sis	Gen	Church	54	33	6	Yes	R N	1910
Sts of Charity (AHL)	Gen	Indep	65	34	10	Yes	Lay	1901
Lafayette General Hosp	Gen	Church	161	106	38	Yes	Lay	1104
Memorial Hospital	Gen	Church	236	164	63	No	Lay	1872
Mercy Hospital	Gen	Indep	200	170		No	R N	1860
Millard Fillmore Hosp	N & M	Church	8	45	65	Yes	R N	1857
Providence Retreat	N & M	Church	2	24		Yes	M D	1898
St Marys Hospital	Mater	Church	85	83		Yes	M D	1909
State Institute for the Study of Malignant Disease	SK & Ca	State	90	40	15	No	R N	1919
U S Marine Hospital	Gen	USPHS	70	50		No	M D	1857
Cambridge 1762—Washington Co	Gen	Indep	96	64	17	No	R N	1903
Mary McClellan Hospital	Gen	Indep	14	6	6	No	R N	1912
Canandaigua 754—Ontario Co	N & M	Indep	96	64	17	No	R N	1903
Brigham Hall Hospital	N & M	Indep	14	6	6	No	R N	1912
Frederick Ferris Thompson Hospital	Gen	Indep	96	64	17	No	R N	1903
Canastota Memorial Hosp	Gen	City	14	6	6	No	R N	1912
Catskill 450—Chautauque Co	Gen	County	180	161		Yes	M D	1910
Newton Memorial Hospital	TB	County	436	390		No	M D	1924
Castle Point 23—Dutchess Co	TB	VetBur	436	390		No	M D	1924
U S Veterans Hospital	TB	VetBur	436	390		No	M D	1924
Central Islip 67—Suffolk Co	N & M	State	6916	6100		Yes	M D	1889
Central Islip State Hosp	N & M	State	6916	6100		Yes	M D	1889
Central Valley 8.0—Orange Co	N & M	Indiv	30	28		No	M D	1889
Dr MacDonalss House	N & M	Indiv	30	28		No	M D	1889
Chenango Bridge 260—Broome Co	N & M	County	78	62		No	M D	1919
Broome Co Tuber Hosp	TB	County	78	62		No	M D	1919
Clifton Springs 1819—Ontario Co	Gen	Indep	400	300	8	Yes	M D	1880
Clifton Springs Sanitarium and Clinic	Gen	Indep	400	300	8	Yes	M D	1880
Cohoes 23 96—Albany Co	Gen	Indep	54	46	6	Yes	R N	1898
Cohoes Hospital	Gen	Indep	54	46	6	Yes	R N	1898
Cold Spring 1784—Putnam Co	Gen	Indep	25	13	5	No	R N	1924
Julia L Butterfield Memorial Hospital	Gen	Indep	25	13	5	No	R N	1924
Cooperstown 2 900—Otsego Co	Gen	Indep	72	45	10	No	M D	1921
Mary Imogene Bassett Hos	Gen	Indep	72	45	10	No	M D	1921
Corning 1577—Steuben Co	Gen	Indep	85	33	25	No	R N	1900
Corning Hospital	Gen	Indep	85	33	25	No	R N	1900
Corona—Queens Co	N & M	Indep	66	58		No	M D	1900
Dr Combes Sanitarium	N & M	Indep	66	58		No	M D	1900
Cortland 15 043—Cortland Co	Gen	Indep	114	75	21	No	R N	1891
Cortland County Hosp	Gen	Indep	114	75	21	No	R N	1891
Cuba 1422—Allegany Co	Gen	Indep	18	6	6	No	R N	1923
Cuba Memorial Hospital	Gen	Indep	18	6	6	No	R N	1923
Dannemora 3 348—Clinton Co	N & M	State	578	697		No	M D	1900
Dannemora State Hospital	N & M	State	578	697		No	M D	1900
Dansville 4 928—Livingston Co	Gen	City	22	10	3	No	R N	1920
Dansville General Hospital	Gen	City	22	10	3	No	R N	1920
Delhi 1 840—Delaware Co	Gen	County	28	14		No	M D	1920
Delaware Co Tuber Sanit	TB	County	28	14		No	M D	1920
Dobbs Ferry 5 741—Westchester Co	Gen	Indep	42	22	10	Yes	R N	1890
Dobbs Ferry Hospital	Gen	Indep	42	22	10	Yes	R N	1890
Dunkirk 17 897—Chautauque Co	Gen	Indep	50	30	12	No	R N	1899
Brook s Memorial Hospital	Gen	Indep	50	30	12	No	R N	1899
Elizabethtown 636—Essex Co	Gen	Indep	11	3	3	Yes	R N	1926
Elizabethtown Community House The Infirmary	Gen	Indep	11	3	3	Yes	R N	1926
Flintville 3 280—Ulster Co	Gen	Indep	14	8	5	Yes	R N	1924
Veterans Memorial Hosp	Gen	Indep	14	8	5	Yes	R N	1924
Flmira 4 397—Chemung Co	Gen	Indep	123	122	30	No	Lay	1888
Arnot Ogden Mem Ho p	Gen	Indep	22	22		No	M D	1918
Chemung County Sanat	TB	County	165	113	27	No	Lay	1908
St Josephs Hospital	TB	Church	165	113	27	No	Lay	1908
Indicott 16 251—Broome Co	Gen	City	107	70	50	No	R N	1927
Ideal Hospital	Gen	City	107	70	50	No	R N	1927
Earlmgdale 3 343—Nassau Co	TB	County	241	223		Yes	M D	1918
Earlmgdale 3 343—Nassau Co	TB	County	241	223		Yes	M D	1918
Far Rockaway—Queens Co	Gen	Indep	60	32		No	R N	1916
Natalie and Louis Hein	TB	Indep	82	50	18	Yes	Lay	1900
St To ephs Hospital	Gen	Church	29	8		No	M D	1901
Fishers Island 394—Suffolk Co	Gen	Army	29	8		No	M D	1901
Station Hospital	Gen	Army	29	8		No	M D	1901
Flushing—Queens Co	Gen	Indep	168	129	7	Yes	Lay	1840
Flushing Hosp & Disp	Gen	Indep	100	40	4	Yes	M D	1860
Station Hospital	Gen	Army	10	8		Yes	M D	1869
St Niagara—Niagara Co	Gen	Army	10	8		Yes	M D	1869
Station Hospital	Gen	Army	10	8		Yes	M D	1869
St Niocum—Westchester Co	Gen	Army	10	8		Yes	M D	1869
Station Hospital	Gen	Army	10	8		Yes	M D	1869
St Wadsworth—Richmond Co	Gen	Army	14	12		Yes	M D	1863
Station Hospital	Gen	Army	14	12		Yes	M D	1863
Fulton 1 467—Oswego Co	Gen	City	39	18	11	No	R N	1910
Albert Lindley Lee Mem	Gen	City	39	18	11	No	R N	1910
Hospital	Gen	City	39	18	11	No	R N	1910
Galiele 400—Franklin Co	TB	Church	140	10		No	Lay	1850
Sanatorium Gabriels	TB	Church	140	10		No	Lay	1850

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt R N	Year Est
Geneva 16 03—Ontario Co								
Geneva General Hospital	Gen	Indep	53	40	11	No	Lay	1889
Glen Cove 11 430—Nassau Co								
North Country Community Hospital	Gen	Indep	90	60	20	Yes	Lay	1922
Parkside Hospital	Gen	Part	13	8	5	No	Lay	1976
Glens Falls 18 531—Warren Co								
Glens Falls Hospital	Gen	Indep	80	60	15	No	Lay	1897
Westmont Sanatorium	TB	County	48	46		No	M D	1927
Gloversville 9 099—Fulton Co								
Nathan Littauer Hospital	Gen	Indep	120	52	16	No	R N	1890
Goshen 2 891—Orange Co								
Goshen Hospital	Gen	Indep	36	14	8	No	R N	1908
Interpines	N & M	Indiv	68	50		No	M D	1890
Gouverneur 4 015—St Lawrence Co								
Stephen B Van Duzee Hos	Gen	Indep	17	10	6	No	R N	1929
Covrntors Island—New York Co								
Station Hospital	Gen	Army	45	30		No	M D	1801
Granville 3 483—Washington Co								
Emma Lang Stevens Hosp	Gen	Indep	16	6	6	No	R N	1909
Greenport 3 062—Suffolk Co								
Easton Long Island Hosp	Gen	Indep	22	15	8	No	R N	1900
Harmon on Hudson 110—Westchester Co								
Orlinton House	N & M	Indiv	20	18		No	M D	1920
Harrison 8 300—Westchester Co								
St Vincent s Retreat	N & M	Church	180	177		No	Lay	1879
Hastings Upon Hudson 7 09—Westchester Co								
Hastings Hillside Hospital	N & M	Indiv	40	38		No	M D	1927
Helmuth—Erie Co								
Gowanda State Homeo								
pathic Hospital	N & M	State	1288	1180		Yes	M D	1898
Hempstead 12 60—Nassau Co								
Mercy Hospital	Gen	Church	22	9	8	No	Lay	1913
Station Hospital	Gen	Army	50	6		Yes	M D	1918
Herkimer 10 446—Herkimer Co								
Herkimer Memorial Hosp	Gen	Indep	30	26	8	Yes	R N	1925
Holcomb 294—Ontario Co								
Oak Mount Sanatorium	TB	County	45	4		No	M D	1910
Holtsville 960—Suffolk Co								
Suffolk Sanatorium	TB	County	96	90		No	M D	1916
Hornell 16 30—Steuben Co								
Bethesda Hospital	Gen	Indep	47	20	10	No	R N	1917
St James Mercy Hospital	Gen	Church	81	39	9	No	R N	1810
Hudson 12 337—Columbia Co								
Hudson City Hospital	Gen	Indep	91	64	13	No	Lay	1880
Huntington 397—Suffolk Co								
Huntington Hospital	Gen	Indep	30	29	10	Yes	R N	1917
Ithaca 9 890—Herkimer Co								
Ithaca Hospital	Gen	Indep	20	18	6	No	R N	1909
Irrington 3 067—Westchester Co								
Irrington House	Cardiac	Indep	80	80		No	R N	1920
Ithaca 9 700—Tompkins Co								
Ithaca Memorial Hosp	Gen	Indep	106	84	20	No	M D	1889
Jamaica—Queens Co								
Holtswood Sanatorium	Gen	Indiv	21	3	5	No	R N	1908
Mary Immaculate Ho p	Gen	Church	240	70	60	Yes	R N	1900
Queensboro Hospital	Gen	City	64	30		No	M D	1910
Jamestown 43 155—Chautauque Co								
Jamestown General Hosp	Gen	City	100	68	15	No	R N	1911
Woman s Christian Associa								
tion Hospital	Gen	Indep	104	50	22	No	R N	1888
Johnson City 13 61—Broome Co								
Charles S Wilson Memorial Hospital	Gen	Indep	170	136	24	No	Lay	1912
Kings Park 1 067—Suffolk Co								
Kings Park State Hosp	N & M	State	828	542		Yes	M D	1890
Kingston 28 085—Ulster Co								
Benedictine Hospital	Gen	Church	90	61	10	No	R N	1907
Kingston Hospital	Gen	Indep	117	9	15	No	R N	1813
Dr C O Sahler Sanit	N & M	Indep	100	49		Yes	Lay	1850
Ulster County Tuberculosis Hospital	TB	County	22	19		No	M D	1899
Lackawanna 23 948—Frie Co								
Moses Taylor Ho pital	Indus	Indiv	29	22		Yes	R N	1901
Our Lady of Victory Hos								
pital	Gen	Church	103	79	18	Yes	R N	1811
Lake Kushaquana 10—Franklin Co								
Stony Wold Sanatorium	TB	Indep	140	140		No	M D	1901
Lake Placid 9 970—F ex Co								
Lake Placid General Hosp	Gen	City	29	1	6	Yes	Lay	1870
Liberty 3 477—Sullivan Co								
Maimonides Hospital	Gen	Frnt	70	14	6	No	R N	1810
Workmen s Circle Sannt	TB	Frnt	100	61		Yes	M D	1900
Little Falls 11 10—Herkimer Co								
Little Falls Ho pital	Gen	Indep	30	23	9	No	R N	1891
Livingston 249—Columbia Co								
Potts Memorial Ho pital	TB	Indep	77	49		No	M D	1810
Lockport 2 100—Niagara Co								
Lockport City Ho pital	Gen	City	70	17	17	No	R N	1810
Niagra County Sanat	TB	County	14	17		Yes	M D	1811
Long Beach 4 87—Nassau Co								
Long Beach Ho pital	Gen	Indep	7	79	6	No	R N	1810
Long Island City—Queen Co								
Astoria Sanatorium	Gen	Indiv	7	2		No	M D	1810
Boulevard Ho pital	Gen	Ind p	7	2		No	R N	1810
River Crest Sanitarium	N & M	Indiv	10	10		No	M D	1810
St John Long Island City Ho pital	Gen	Church	247	109		Yes	R N	1810
Loomis 30—Sullivan Co								
Loomis Sanatorium	TB	Indep	29	20		No	M D	1810
Lyon 10—Wayn Co								
Edward J Barber Ho pital	Gen	Indiv	2	10		No	M D	1810
Towleston Simp on Ho p	Gen	Ind p	1	1		No	M D	1810
Malone 8—Franklin Co								
Alcey Hill Memorial Ho	Gen	Ind p	0	0	11	No	Lay	1810

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt. M.D.	R.N. Layman	Year Est
Mamaroneck 11766—Westchester Co	N&M	Indiv	21	10	No	M D	1889		
Dr Wellington's House	N&M	Indiv	21	10	No	M D	1889		
Medford Station 259—Suffolk Co	TB	Indep	60	2	No	Lay	1913		
Medford Tuber Sanat	TB	Indep	60	2	No	Lay	1913		
Medina 6071—Orleans Co	Gen	Indep	28	14	6	No	R N	1905	
Medina Memorial Hospital	Gen	Indep	28	14	6	No	R N	1905	
Middle Grove 260—Saratoga Co	TB	County	90	55	No	M D	1914		
Saratoga Co Tuber Hosp	TB	County	90	55	No	M D	1914		
Middleton 21276—Orange Co	Gen	Indep	90	49	18	No	M D	1929	
Elizabeth A. Horton Memorial Hospital	Gen	Indiv	50	31	8	No	M D	1906	
Middletown Sanit. & Hosp	Gen	Indiv	50	31	8	No	M D	1906	
Middletown State Homeopathic Hospital	Ment	State	3092	2040	Yes	M D	1874		
Mincola 8155—Nassau Co	Gen	Indep	170	152	30	No	R N	1896	
Nassau Hospital	Gen	Indep	170	152	30	No	R N	1896	
Monticello 4450—Sullivan Co	Gen	Indep	2	13	No	M D	1924		
Monticello Hospital	Gen	Indep	2	13	No	M D	1924		
Montour Falls 1489—Schuyler Co	Gen	County	12	8	6	No	R N	1921	
Shepard Relief Hospital	Gen	County	12	8	6	No	R N	1921	
Mt Kisco 5127—Westchester Co	Gen	Indep	80	58	1	No	R N	1916	
Northern Westchester Hosp	Gen	Indep	80	58	1	No	R N	1916	
Mt McGregor—Saratoga Co	Gen	Indep	80	58	1	No	R N	1916	
Metropolitan Life Insurance Company Sanatorium	Gen	Indep	360	200	No	M D	1913		
Mt Vernon 61499—Westchester Co	Gen	Indep	118	92	12	Yes	R N	1890	
Mt Vernon Hospital	Gen	Indep	118	92	12	Yes	R N	1890	
Mt Vision 238—Otsego Co	TB	County	20	1	No	M D	1918		
Otsego County Sanat	TB	County	20	1	No	M D	1918		
Newark 7649—Wayne Co	Gen	Indiv	17	10	4	Yes	M D	1921	
Newark Hospital	Gen	Indiv	17	10	4	Yes	M D	1921	
Newark State School	MenDef	State	1124	191	No	M D	1878		
Newburgh 31275—Orange Co	TB	County	54	46	No	M D	1909		
Fstelle and Walter C Odell Mem Sanat for Tuber	TB	County	54	46	No	M D	1909		
St Luke's Hospital	Gen	Indep	114	96	20	Yes	Lay	1874	
New Rochelle 54000—Westchester Co	Gen	Indep	121	106	26	Yes	Lay	1892	
New Rochelle Hospital	Gen	Indep	121	106	26	Yes	Lay	1892	
New York City 4211099—New York Co	Chil	Indep	900	67	Yes	M D	1887		
Babies Hospital	Chil	Indep	900	67	Yes	M D	1887		
Beekman Street Hospital	Gen	Indep	100	72	Yes	R N	1903		
Bellerue Hospital	Gen	Indep	2069	1948	60	Yes	M D	1816	
Both David Hospital	Gen	Indep	104	78	24	Yes	M D	1886	
Beth Israel Hospital	Gen	Indep	460	229	40	Yes	Lay	1890	
Broad Street Hospital	Gen	Indep	112	79	6	Yes	Lay	1917	
Bronx Eye and Ear Infirmary	EB&T	Indep	30	11	Yes	R N	1901		
Bronx Hospital	Gen	Indep	223	68	72	Yes	Lay	1911	
Bronx Maternity Hospital	Mater	Indep	40	32	40	Yes	R N	1912	
Bronx Sanitarium	Gen	Indep	12	9	12	No	Lay	1907	
Central Park West and Towns Hospital	Gen	Indiv	50	20	2	No	M D	1901	
Columbus Hosp Extension	Gen	Church	100	45	10	No	M D	1920	
Community Hospital	Gen	Indep	91	78	19	Yes	R N	1910	
Concourse Sanitarium	Gen	Indep	45	36	25	No	M D	1923	
Crotona Park Sanitarium	Gen	Indep	30	4	26	No	Lay	1926	
Doctors Hospital	Gen	Indep	264	63	55	No	Lay	1927	
Druckin Hospital	Gen	Indiv	19	12	19	No	Lay	1924	
Echo Hill Sanitarium	Gen	Part	18	10	10	No	M D	1924	
Edith Gibbs Kimball Memorial	TB	Indep	22	22	No	R N	1911		
Fifth Avenue Hospital	Gen	Indep	300	154	40	Yes	M D	1920	
Fifty Seven W 57th Sanit	Gen	Indep	8	New	15	No	Lay	1930	
Fitch Sanitarium	Gen	Indep	75	42	40	No	M D	1925	
Fordham Hospital	Gen	City	342	300	40	Yes	Lay	1892	
French Hospital	Gen	Part	204	154	Yes	Lay	1899		
Gelber Hospital	EB&T	Indiv	21	5	1	No	M D	1915	
Gouverneur Hospital	Gen	City	189	140	22	Yes	Lay	1885	
Harlem Eye & Ear Hosp	EB&T	Indep	45	35	Yes	M D	1881		
Harlem Hospital	Gen	Cy&Co	325	310	62	Yes	Lay	1887	
Herman Knapp Memorial Eye Hospital	Eye	Indep	50	37	Yes	R N	1869		
Hospital for Joint Diseases	GenOrtho	Indep	301	273	Yes	M D	1900		
Hunts Point Hospital	Gen	Indep	80	50	45	No	R N	1922	
International Hospital	Gen	Indep	50	12	8	No	M D	1930	
Italian Benevolent Institute and Hospital	Gen	Indep	92	77	12	Yes	R N	1905	
Jewish Maternity Hospital	Mater	Indep	52	36	62	Yes	R N	1904	
Jewish Memorial Hospital	Gen	Indep	103	79	12	Yes	Lay	1904	
Kniekerbocker Hospital	Gen	Indep	193	128	30	Yes	R N	1862	
Lebanon Hospital	Gen	Indep	162	123	30	Yes	Lay	1890	
Dr Left's Maternity Hosp	Mater	Indiv	51	26	51	No	M D	1919	
Lempert Hospital	EB&T	Indiv	25	20	No	R N	1923		
Lenox Hill Hospital	Gen	Indep	323	274	16	Yes	Lay	1861	
Lincoln Hospital	Gen	City	385	292	45	Yes	M D	1839	
Lutheran Hospital	Gen	Church	100	71	21	Yes	Lay	1911	
Lying In Hospital	Mater	Indep	156	129	127	Yes	M D	1793	
Madison Hospital	Gen	Part	100	40	12	No	Lay	1929	
Manhattan Eye Ear and Throat Hospital	EB&T	Indep	218	137	Yes	Lay	1869		
Manhattan Maternity and Dispensary	Mater	Indep	48	39	50	Yes	R N	1901	
Manhattan State Hosp	N&M	State	4887	6930	2	Yes	M D	1896	
Memorial Hospital for the Treatment of Cancer and Allied Diseases	Cancer	Indep	103	97	Yes	Lay	1884		
Metropolitan Hospital	Gen	City	1520	1345	40	Yes	M D	1875	
Midtown Hospital	Gen	Indep	61	34	Yes	Lay	1893		
Misericordia Hospital	Gen	Church	250	160	17	Yes	R N	1885	
Montefiore Hospital for Chronic Diseases	Gen	Chron	845	845	Yes	M D	1884		
Morrisania City Hospital	Gen	City	457	346	68	Yes	M D	1929	
Mount Morris Park Sanit	Gen	Indiv	60	30	30	No	Lay	1924	
Mt Sinai Hospital	Gen	Indep	676	543	Yes	M D	1852		
Murray Hill Sanitarium	Gen	Indep	69	45	12	No	Lay	1894	

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt. M.D.	R.N. Layman	Year Est
Neurological Hospital	N&M	City	40	465					
Neurological Institute of New York	N&M	Indep	211	175		Yes	R N		1909
New York City Cancer Institute Hospital	Cancer	City	202	190		Yes	M D		1923
New York City Children's Hospital	MenDef	City	1688	1462		No	M D		184
New York City Hospital	Gen	City	1000	986	9	Yes	M D		1837
New York Eye and Ear Infirmary	EB&T	Indep	175	110		Yes	Lay		190
New York Foundling Hospital	Mat Chil	Church	240	175	50	No	Lay		1809
New York Homeo Med College and Flower Hosp	Gen	Indep	187	18	40	Yes	Lay		190
New York Hospital for Women and Children	Gen	Indep	298	230		Yes	M D		1911
New York Nursery and Child's Hospital	Mat Chil	Indep	117	75	20	Yes	R N		1853
New York Ophthalmic Hospital	EB&T	Indep	164	112	92	Yes	Lay		1923
New York Orthopedic Dispensary and Hospital	Ortho	Indep	60	28		Yes	Lay		1866
New York Polyclinic Medical School and Hosp	Gen	Indep	266	190	30	Yes	Lay		181
New York Postgraduate Medical School and Hospital	Gen	Indep	427	394		Yes	M D		181
New York Society for the Relief of the Ruptured and Crippled	Ortho	Indep	270	24		Yes	Lay		1866
New York State Psychiatric Institute	N&M	State	200	9		Yes	M D		1920
Norfolk Hospital	Gen	Indep	8	4	12	No	Lay		1928
Norfolk West Hospital	Gen	Indep	8	4	12	No	R N		1929
People's Hospital	Gen	Indep	10	4	5	No	M D		1906
Presbyterian Hospital	Gen	Church	722	57	149	Yes	Lay		1866
Reconstruction Hospital	Gen	Indep	6	1		Yes	M D		1924
Riverside Hospital	Tb Iso	City	370	26		No	M D		1890
Rockefeller Institute for Medical Research	Gen	Indep	60	3		No	R N		1901
Dr Roger's Hospital	N&M	Indiv	25	17		No	M D		1923
Roosevelt Hospital	Gen	Indep	991	248		Yes	Lay		1904
St Elizabeth's Hospital	Gen	Church	120	68	24	No	Lay		1850
St Francis Hospital	Gen	Church	400	290		No	Lay		1866
St Joseph's Hospital for Consumptives	TB	Church	410	360		No	Lay		1850
St Luke's Hospital	Gen	Church	530	381	6	Yes	Lay		1850
St Mary's Hospital for Children	Chil	Church	134	84		Yes	Lay		1850
St Vincent's Hospital	Gen	Church	368	300		Yes	R N		1849
Seton Hospital	TB	Church	230	218		No	Lay		1904
Sherman Square Hospital	Chil	Indep	50	35	10	No	R N		1910
Sloane Hosp for Women	Mater	Indep	178	129	144	Yes	R N		1888
Stuyvesant Square Hosp	Chil	Indep	91	37		Yes	R N		1885
Sydenham Hospital	Gen	Indep	176	142	24	Yes	M D		1899
Union Hospital	Gen	Indep	75	44	18	No	R N		1910
United States Marine Hospital No 43	Gen	USPHS	500	995		Yes	M D		1919
U S Veterans Hospital	N&M	VetBur	904	910		Yes	M D		1920
West Hill	N&M	Indiv	4	24		No	M D		1912
West Side Hosp and Disp	Gen	Indep	27	16		Yes	Lay		1812
Willard Parker Hosp	Iso	City	400	178		No	M D		1919
William Booth Mem Hosp	Gen	Church	49	36	20	Yes	Lay		1880
Woman's Hospital	Mater	Indep	218	169	71	Yes	Lay		1880
York House	Mater	Indep	18	12	15	No	Lay		1921
Niagara Falls 75400—Niagara Co	Gen	Church	144	70	16	Yes	R N		1907
Mount St Mary's Hosp	Gen	Church	160	83	24	No	Lay		1880
Niagara Falls Mem Hosp	Gen	Indep	160	83	24	No	Lay		1880
Northport 259—Suffolk Co	N&M	VetBur	944	941		No	M D		1925
U S Veterans Hospital	N&M	VetBur	944	941		No	M D		1925
North Tonawanda 39109—Niagara Co	Gen	City	45	23	18	No	R N		1914
Dr Craft Memorial Hosp	Gen	City	45	23	18	No	R N		1914
Norwich 8738—Chenango Co	Gen	Indep	62	31	10	No	R N		1909
Chenango Memorial Hosp	Gen	Indep	62	31	10	No	R N		1909
Nyack 6392—Rockland Co	Gen	Indep	60	64	12	No	R N		1890
Nyack Hospital	Gen	Indep	60	64	12	No	R N		1890
Ogdensburg 16915—St Lawrence Co	Gen	Church	170	131	20	Yes	R N		1888
A Barton Hepburn Hosp	Gen	Church	170	131	20	Yes	R N		1888
St Lawrence State Hosp	N&M	State	2232	431	1	Yes	M D		1888
Olean 21790—Cattaraugus Co	Gen	Indiv	70	24	9	Yes	R N		1918
Mountain Clinic	Gen	Indep	81	50	25	No	R N		1888
Olean General Hospital	Gen	Indep	81	50	25	No	R N		1888
Rocky Crest Sanatorium	TB	County	60	38		No	M D		1916
Oswego 10358—Madison Co	Gen	Indep	50	30	11	No	R N		1907
Broad Street Hospital	Gen	City	10	7	4	No	Lay		1869
Oswego City Hospital	Gen	City	10	7	4	No	Lay		1869
Oneonta 12632—Otsego Co	Gen	Indep	48	30	7	Yes	R N		1901
Aurilia Osborn Fox Memorial Hospital	Gen	Indep	48	30	7	Yes	R N		1901
Parshall Private Hospital	Gen	Indiv	30	10	10	No	R N		1919
Orangeburg 360—Rockland Co	N&M	State	3760	New		No	M D		1930
Rockland State Hospital	N&M	State	3760	New		No	M D		1930
Orwell 314—Oswego Co	TB	Indiv	100	40		No	M D		1918
Idell Rest Sanatorium and Hospital	TB	Indiv	100	40		No	M D		1918
Oswego 16241—Westchester Co	N&M	Indiv	19	9		No	M D		1880
Greenmont on the Hudson	N&M	Indep	60	30	10	No	R N		1885
Ossining Hospital	Gen	Indep	60	30	10	No	R N		1885
Oswego 22632—Oswego Co	Gen	Indep	89	40	10	No	Lay		1881
Oswego Hospital	Gen	Indep	89	40	10	No	Lay		1881
Station Hospital	Gen	Army	15	11		Yes	M D		1864
Otisville 809—Orange Co	TB	City	384	280		No	M D		1906
Municipal Sanatorium of the Department of Health	TB	City	384	280		No	M D		1906

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Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Bathrooms	Outpatient Dept	Supt M D R N	Year Est
Owego 474—Tioga Co	N & M	Indep	20	12	No	M D	1889	
Glennary Sanitarium	Gen	Indiv	14	10	6	No R N	1923	
Patchogue 6860—Suffolk Co	Gen	Indiv	20	16	No	M D	1913	
Patchogue Private Hosp	N & M	Indiv	20	16	No	M D	1913	
Pawling 1904—Dutchess Co	Gen	Indep	76	43	10	No R N	1880	
White Oak Farm	N & M	Indiv	20	16	No	M D	1913	
Peekskill 17125—Westchester Co	Gen	Indep	40	29	10	No R N	1911	
Peekskill Hospital	Gen	Indep	40	29	10	No R N	1911	
Penn Yan 5399— Yates Co	Gen	Indep	40	29	10	No R N	1911	
Soldiers and Sailors Memorial Hospital	Gen	Indep	40	29	10	No R N	1911	
Perrysburg 317—Cattaraugus Co	T B	City	500	483	No	M D	1912	
J N Adam Mem Hosp	T B	City	500	483	No	M D	1912	
Philmont 1868—Columbia Co	T B	County	78	48	Yes	M D	1920	
Columbia County Tuberculosis Sanitarium	T B	County	78	48	Yes	M D	1920	
Plattsburg 13349—Clinton Co	Gen	Church	90	75	12	Yes R N	1910	
Champlain Valley Hosp	Gen	Church	115	63	18	Yes R N	1920	
Physicians Hospital	Gen	Army	56	11	Yes	M D	1894	
Station Hospital	Gen	Army	56	11	Yes	M D	1894	
Pt Chester 2166—Westchester Co	Gen	Indep	164	70	36	Yes	Lay	1889
United Hospital	Gen	Indep	164	70	36	Yes	Lay	1889
Pt Jefferson 2100—Suffolk Co	Gen	Indep	58	29	12	No R N	1929	
John T Mather Memorial Hospital	Gen	Indep	58	29	12	No R N	1929	
St Charles Hosp for Crippled Children & Brooklyn Home for Blind and Deaf Children	Ortho	Church	240	230	No	Lay	1909	
Pt Jervis 10245—Orange Co	Gen	Church	60	30	5	Yes	Lay	1899
St Francis Hospital	Gen	Church	60	30	5	Yes	Lay	1899
Potsdam 4136—St Lawrence Co	Gen	Indep	16	10	4	No R N	1924	
Potsdam Hospital	Gen	Indep	16	10	4	No R N	1924	
Poughkeepsie 40288—Dutchess Co	N & M	State	4164	1060	Yes	M D	1868	
Hudson River State Hosp	N & M	State	10	9	No	R N	1900	
Sadler's Hospital	Surg	Indiv	80	51	20	No R N	1913	
St Francis Hospital	Gen	Church	80	51	20	No R N	1913	
Samuel and Nettie Bowne Hospital	T B	Cy & Co	50	47	No	M D	1928	
Samuel W Bowne Memorial Hospital	T B	Cy & Co	142	140	No	M D	1909	
Vassar Brothers Hosp	Gen	Indep	176	123	28	Yes	Lay	1882
Queens Village—Queens Co	N & M	State	1974	1920	Yes	M D	1912	
Creedmoor Div of Brooklyn State Hospital	N & M	State	1974	1920	Yes	M D	1912	
Ray Brook 40—Saratoga Co	T B	State	300	297	No	M D	1900	
New York State Hosp	T B	State	300	297	No	M D	1900	
Remsen 437—Oneida Co	N & M	Indiv	18	9	No	M D	1893	
Whitesboro Sanitarium	N & M	Indiv	18	9	No	M D	1893	
Rhinebeck 1569—Dutchess Co	Gen	Indep	30	18	8	Yes R N	1903	
Northern Dutchess Health Service Center	Gen	Indep	30	18	8	Yes R N	1903	
Richland 401—Oswego Co	T B	County	115	105	No	M D	1913	
Oswego County Sanitarium	T B	County	115	105	No	M D	1913	
Richmond Hill—Queens Co	Gen	Indep	126	93	33	Yes	Lay	1892
Jamaica Hospital	Gen	Indep	126	93	33	Yes	Lay	1892
Rochester 328132—Monroe Co	Gen	Indiv	16	4	12	No R N	1924	
Belvidere Private Hospital	Gen	Indiv	200	123	20	Yes M D	188	
Genevieve Hospital	Gen	Indep	200	133	58	Yes M D	1889	
Highland Hosp	Gen	Indep	200	133	58	Yes M D	1889	
Iola Sanitarium	T B	County	400	345	1	No M D	1910	
Monroe County Hospital	Gen	County	249	245	1	No M D	1910	
Park Avenue Hospital	Gen	Indep	81	65	20	No R N	1902	
Rochester Gen Hosp	Gen	Indep	265	201	40	Yes M D	184	
Rochester Municipal Hospital (AMH)	Gen	City	235	192	32	No	Lay	1903
Rochester State Hospital	N & M	State	237	2131	Yes	M D	1891	
St Mary's Hospital	Gen	Church	181	135	20	Yes R N	1885	
Strong Memorial Hosp	Gen	Indep	266	136	30	Yes M D	1926	
Rockaway Beach—Queens Co	T B	City	120	122	No	R N	1915	
Rockaway Beach Hospital for Children	T B	City	120	122	No	R N	1915	
Rockaway Beach Hospital and Dispensary	Gen	Indep	110	70	15	No	Lay	1908
Rockville Center 13718—Nassau Co	Gen	Indep	54	43	18	No R N	1925	
South Nassau Community Hospital	Gen	Indep	54	43	18	No R N	1925	
Rome 3338—Oneida Co	Gen	City	60	42	17	No R N	1924	
James A Murphy Memorial Hospital	Gen	City	60	42	17	No R N	1924	
Oneida County Hospital	Gen	County	174	150	6	Yes M D	191	
Rome Infirmary	Gen	Indiv	50	25	18	Yes R N	190	
Rome State School	N & M	State	2700	337	20	No M D	1904	
Sackett Harbor 742—Jefferson Co	Gen	Army	19	18	Yes	M D	181	
Salamanca 977—Cattaraugus Co	Gen	City	30	21	5	No R N	189	
City Hospital	Gen	City	30	21	5	No R N	189	
Salesbury Center 300—Herkimer Co	T B	County	90	90	No	M D	1920	
Pine Crest Sanitarium	T B	County	90	90	No	M D	1920	
Saranac Lake 6090—Franklin Co	Gen	Indep	30	21	10	No R N	1912	
General Hospital	Gen	Indep	30	21	10	No R N	1912	
National Variety Artists Sanitarium	T B	Indep	100	80	No	M D	192	
Northwoods Sanitarium	T B	Indep	30	27	No	Lay	190	
Reception Hospital	T B	Indiv	20	20	No	R N	1910	
St Mary's of the Lake	T B	Church	30	25	No	Lay	1910	
Saratoga Springs 13160—Saratoga Co	Gen	Indep	85	49	32	Yes R N	1901	
Saratoga Hospital	Gen	Indep	85	49	32	Yes R N	1901	
Schenectady 9602—Schenectady Co	Gen	Indep	246	204	39	Yes R N	191	
Fills Hospital	Gen	County	130	98	No	M D	190	
Seneca Falls 6443—Seneca Co	Gen	City	26	13	7	No R N	1910	
Seneca Falls Hospital	Gen	City	26	13	7	No R N	1910	
Shelburne 1077—Chenango Co	T B	County	35	30	Yes	M D	1915	
Brookside Crest Sanit	T B	County	35	30	Yes	M D	1915	

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Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Bathrooms	Outpatient Dept	Supt M D R N	Year Est
Sodus 1444—Wayne Co	Gen	Indiv	30	12	7	No	M D	1900
Myers Hospital	Gen	Indiv	30	12	7	No	M D	1900
Sonyea—Livingston Co	Epil	State	1666	1667		No	M D	1894
Oriskany Colony	Epil	State	1666	1667		No	M D	1894
Southampton 3737—Suffolk Co	Gen	Indep	103	44	12	Yes R N		1909
Southampton Hospital	Gen	Indep	103	44	12	Yes R N		1909
Stamford 1103—Delaware Co	Gen	Indep	10	4	2	No	M D	1920
Stamford Hospital	Gen	Indep	10	4	2	No	M D	1920
Staten Island 11590—Richmond Co	Gen	Indep	60	35	20	Yes	Lay	1919
Richmond Memorial Hosp	Gen	Church	200	96	76	Yes R N		1903
St Vincent's Hospital	Gen	Church	200	96	76	Yes R N		1903
Sea View Hospital	T B	City	100	1021	27	No	M D	1913
Staten Island Hospital	Gen	Indep	231	135	44	Yes	Lay	1901
United States Marine Hospital	Gen	USPHS	288	285		Yes	M D	1888
Suffern 3757—Rockland Co	Gen	Church	37	20	10	No	R N	1902
Good Samaritan Hospital	Gen	Church	37	20	10	No	R N	1902
Summit Park 150 (Pomona P O)—Rockland Co	T B	County	0	0		Yes	M D	1919
Summit Park Sanitarium	T B	County	0	0		Yes	M D	1919
Summit—Franklin Co	T B	County	0	0		Yes	M D	1919
U S Veterans Hospital	T B	VetBur	370	340		No	M D	1924
Syracuse 209726—Onondaga Co	Gen	City	100	25		No	R N	1875
City Hospital	Gen	City	100	25		No	R N	1875
Crouse Irving Hospital	Gen	Indep	204	140	30	No	M D	1912
General Hospital	Gen	Indep	85	72	20	Yes	Lay	1891
Hospital of the Good Shepherd	Gen	Indep	258	164	27	No	R N	1872
Onondaga General Hosp	Gen	City	56	23	20	No	R N	1918
Onondaga Sanatorium	T B	County	228	203		Yes	M D	1916
Peoples Hospital	Gen	Indep	33	16	10	No	R N	1913
St Joseph Hospital	Gen	Church	200	132	31	No	R N	1869
St Mary's Mater Hosp	Mater	Church	40	33	22	No	Lay	1900
Syracuse Memorial Hosp	Gen	Indep	210	143	40	Yes	R N	1887
Syracuse Psychopathic Hosp	N & M	State	60	50		Yes	M D	1930
Syracuse State School	MenDef	State	1120	1000		No	M D	1861
Tarrytown 641—Westchester Co	Gen	Indep	48	30	12	No	R N	1892
Tarrytown Hospital	Gen	Indep	48	30	12	No	R N	1892
Thiells 370—Rockland Co	FeMI	State	267	2008		No	M D	1910
Letchworth Village	FeMI	State	267	2008		No	M D	1910
Ticonderoga 3680—Essex Co	Gen	Indep	44	20		No	R N	1908
Moses Ludington Hospital	Gen	Indep	44	20		No	R N	1908
Troy 7763—Rensselaer Co	Gen	Indep	54	45	8	No	R N	1894
Leonard Hospital	Gen	Indep	54	45	8	No	R N	1894
Marshall Sanitarium	N & M	Indep	60	37		No	M D	1811
St Joseph's Maternity Hos	Mater	Church	35	11	2	No	Lay	1900
Samaritan Hospital	Gen	Indep	161	91	14	Yes	R N	1888
Troy Hospital	Gen	Church	250	150	12	Yes	R N	1880
Trudeau 20—Essex Co	T B	Indep	200	190		No	Lay	1884
Trudeau Sanitarium	T B	Indep	200	190		No	Lay	1884
Trumansburg 1145—Tompkins Co	T B	County	30	20		No	M D	1911
Tupper Lake 3041—Franklin Co	Gen	Church	30	9	4	No	Lay	1919
Mercy General Hospital	Gen	Church	30	9	4	No	Lay	1919
Tuxedo Park 9000—Orange Co	Gen	Indep	37	17	6	No	R N	1907
Tuxedo Memorial Hospital	Gen	Indep	37	17	6	No	R N	1907
Utica 10140—Oneida Co	T B	County	120	112		No	M D	1929
Broadacres Sanitarium	T B	County	120	112	14	Yes	R N	1874
Iaxton Ho pital	Gen	Indep	132	113		Yes	R N	1874
Masonic Soldiers and Sailors Memorial Hospital	Gen	Frat	200	180		No	Lay	1902
St Elizabeth's Hospital	Gen	Church	120	80	20	No	R N	1890
St Luke's Home & Hosp	Gen	Church	123	83	28	No	Lay	1899
Utica General Hospital	Gen	City	112	73	5	Yes	R N	1884
Utica Memorial Hospital	Gen	Indep	63	40	1	No	R N	1890
Utica State Hospital	N & M	State	2578	2000		Yes	M D	1811
Valhalla 60—Westchester Co	Gen	County	682	200	16	Yes	M D	1888
Grasslands Hospital	Gen	County	682	200	16	Yes	M D	1888
Warsaw 3477—Wyoming Co	Gen	Indep	46	30	11	No	Lay	1910
Wyoming County Community Hospital	Gen	Indep	46	30	11	No	Lay	1910
Warwick 2447—Orange Co	Gen	Indiv	21	10		No	Lay	1900
Warwick Hosp and Clinic	Gen	Indiv	21	10		No	Lay	1900
Watkins 260—Dutchess Co	MenDef	State	200	New		No	M D	1920
Watkins State School	MenDef	State	200	New		No	M D	1920
Waterloo 2047—Seneca Co	Gen	Indep	10	9	5	No	R N	1920
Waterloo Memorial Hosp	Gen	Indep	10	9	5	No	R N	1920
Watertown 2220—Jefferson Co	Gen	Indep	114	97	10	No	R N	1811
House of the Good Samaritan	Gen	Indep	114	97	10	No	R N	1811
Jefferson Co Tuberc Sanat	T B	County	104	70	14	Yes	M D	1911
Jefferson Hospital	Gen	Church	104	70	14	No	R N	1911
Wellsville 564—Allegany Co	Gen	City	4	1	10	No	R N	1921
Jone Memorial Hospital	Gen	City	4	1	10	No	R N	1921
Westchester—Bronx Co	Gen	Army	24	11		Yes	M D	1811
Westchester Hospital	Gen	Army	24	11		Yes	M D	1811
West Haverstraw 2834—Rockland Co	Ortho	State	10	100		No	Lay	1900
New York State Reformatory	Ortho	State	10	100		No	Lay	1900
West Point 120—Orange Co	Gen	Army	140	0		No	M D	1810
Station Ho pital	Gen	Army	140	0		No	M D	1810
White Plains 6050—Westchester Co	N & M	Indep	700	0		Yes	M D	1911
Bloomington Ho pital	N & M	Indep	700	0		Yes	M D	1911
New York Orthopedic Dispensary and Ho pital	Ortho	Ind p	10	100		Yes	Lay	1910
St Agnes Ho pital	Gen	Church	112	73	5	No	Lay	1884
White Plains Ho pital	Gen	Ind p	115	61		No	R N	1911
White Plains—Queen Co	N & M	Indiv	70	2		No	M D	1910
Dr Harri son's Sanitarium	N & M	Indiv	70	2		No	M D	1910
Willard 90—Seneca Co	N & M	State	2	2	2	Yes	M D	1811
Willard State Ho pital	N & M	State	2	2	2	Yes	M D	1811
Willard 16—Dutchess Co	N & M	State	10	100		No	M D	1910
Harlem Valley State Ho p	N & M	State	10	100		No	M D	1910
Woodhaven—Queen Co	T B	Church	40	20		No	Lay	1910
Woodhaven 2834—Rockland Co	T B	Church	40	20		No	Lay	1910

NEW YORK—Continued

Related Institutions	Type of Service	Control	Beds	Average Patients	Basinsets	Outpatient Dept	Supt M D R N Layman	Year Est
Pleasantville 4540—Westchester Co	Sheltering Guar	Co						
Hebrew Orphan Asylum	Inst l	Indep	10				I ay	1879
Port Chester 22 662—Westchester Co	St Luke's Conv Hospital	Conv	88	72	No	I ay	1927	
St. Jervis 10 943—Orange Co	Deer Park Hospital	Gen	16	5	4	No	Lay	1900
Poughkeepsie 40 28—Dutchess Co	Children's Home of Poughkeepsie	Inst l	Indep	10	2		Lay	1847
Poughkeepsie City Home and Infirmary	Inst l	City	20	16	Yes	Lay	1907	
Swift Infirmary Vassar College	Inst l	Indep	28	10	Yes	M D	1902	
Rhinebeck 1569—Dutchess Co	Holiday Farm Home for Convalescent Children	Conv	Indiv	50	45		R N	1902
Rochester 32 132—Monroe Co	Conv Hosp for Children	Conv	Indep	48	42	No	R N	1887
Monroe Co Penitentiary	Inst l	County	11	4	No	Lay	1834	
Rest Haven	Conv	Indiv	10	7	No	Lay	1926	
Rockaway Park—Queens Co	Convalescent Home for Hebrew Children	Conv	Indep	111	100		R N	1849
Schenectady 9 692—Schenectady Co	General Electric Company Industrial Hospital	Indus	Indus	13	4	No	M D	1920
Schenectady City Hosp	Iso	City	36	18		R N	1906	
Schenectady County Almshouse and Hospital	Inst l	County	50	40		Lay		
Sea Cliff 3 4 6—Nassau Co	Country Home for Convalescent Babies	Conv	Indep	50	50	10	M D	1890
Staten Island 115 940—Richmond Co	Home for Dependents	Inst l	City	60	49	No	Lay	1917
Sailors Snug Harbor Hosp	Inst l	Indep	200	160	No	M D	1901	
Seaside Hospital	Chld	Indep	190	178	No	Lay	1877	
Tarrytown 6 811—Westchester Co	Robins Nest	Conv	Indep	40	38		R N	1891
Troy 2 763—Rensselaer Co	Rensselaer County House of Industry	Inst l	County	70	68	No	M D	1882
Troy Orphan Asylum	Inst l	Indep	29	1	No	Lay	1833	
Valhalla 670—Westchester Co	Blythedale Home for Convalescent Crippled Child	Conv	Indep	69	57	No	R N	1892
Martha Home for Convalescent Boys	Conv	Indep	15	15		M D	1926	
Milbank Memorial Home for Convalescent Boys	Conv	Indep	70	51		R N	1920	
Valley Cottage 212—Rockland Co	Read Farm and Nichols Cottage Convalescent Home	Conv	Indiv	25	20		R N	1906
Watertown 32 800—Jefferson Co	Jefferson County Home	Inst l	County	31	30		Lay	1912
Watkins Glen 2 006—Schuyler Co	Glen Springs	Conv	Indep	200	75	No	Lay	1890
Wavecrest (Far Rockaway P O)—Queens Co	Sensile Home and Hosp	Conv	Indep	160	30	40	R N	1846
Wavecrest Conv Home	Conv	Indep	60	30		R N	1920	
Wellsville 6 674—Allegany Co	Wellsville Sanitarium	Conv	Indiv	30	7		M D	1934
White Plains 30 530—Westchester Co	Campbell Cottages for Convalescent Children	Conv	Indep	80	76	No	R N	1900
Martine Farm Children's Cardiac Conv Home	Conv	Indiv	25	20		R N	1921	
Winifred Masterson Burke Relief Foundation	Conv	Indep	310	220		M D	1911	
Williamsville 3 119—Frie Co	Josephine Goodyear Convalescent Home	Conv	Indiv	60	00		R N	1912
Yonkers 134 646—Westchester Co	Hebrew National Orphan Home	Chil	Indep	9	2		Lay	1913
Leake and Watts Orphan House	Inst l	Indiv	40	5		Lay	1831	
Sunny Rest Sanitarium	Conv	Indiv	15	10	No	M D	1910	
Yonkers City Hospital for Communicable Diseases	Iso	City	87	14	No	R N	1912	
Summary for New York								
Hospitals and sanatoriums	Number	Beds	Patients	Basinsets				
Related institutions	473	127 480	110 860	6 994				
	13	8 882	6 947	91				
Totals	606	136 362	117 812	7 077				
Refud registration	30	901		210				

NORTH CAROLINA

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinset	Outpatient Dept	Supt M D R N Layman	Year Est.	
Albemarle 3 493—Stanly Co	Madkin Hospital	Gen	Indep	30	10	3	No	M D	1926
Ashville 50 193—Buncombe Co									
Ambley Heights Sanit	TB	Indiv	0	24	No	M D	1922		
Appalachian Hall	N&M	Indep	200	0	No	M D	1916		
Ashville Mission Hosp	Cen	Indep	107	66	12	No	R N	1900	
Ashville Physiatric Inst	Metab	Indiv	10	0	No	M D	1917		
Anton Park Hospital	Gen	Indep	76	47	8	Yes	R N	1917	

NORTH CAROLINA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinsets	Outpatient Dept	Supt M D R N Layman	Year Est	
Fairview Cottage Sanit	TB	Indiv	130	0			I ay	1904	
Norburn Ho pital	Surg	Part	35	18	1	No	R N	1928	
St. Joseph's Sanatorium	TB	Church	90	92		No	Lay	1900	
Sunset Heights	TB	Indep	30	18		No	R N	1922	
Violet Hill Sanatorium	TB	Indiv	40	30		No	R N	1907	
Zephyr Hill Sanatorium	TB	Indiv	30	15		No	R N	1920	
Badin 3 040—Stanly Co	Gen	Indus	30	10	6	No	M D	1918	
Badin Hospital	Gen	Indus	30	10	6	No	M D	1918	
Banners Flk 340—Avery Co	Grace Hospital	Gen	Church	28	26	2	Yes	M D	1924
Beaufort 2 937—Carteret Co	Potter Emergency Hosp	Gen	Indep	13	7		No	R N	1927
Biltmore 17—Buncombe Co	Biltmore Hospital	Cen	Indep	53	26	8	Yes	R N	1899
Biltmore Sanatorium	TB	Part	60	30		No	R N	1920	
Black Mountain 17—Buncombe Co	Beallmont Park Sanat	N&M	Indep	20	15		No	M D	1921
Cragmont Sanatorium	TB	Indep	30	15		No	M D	1906	
Fellowship Association of the Royal League Hosp	TB	Frat	20	12		No	M D	1904	
Boone 1 29—Watauga Co	Watauga Hospital	Cen	Indiv	12	4	2	No	M D	192
Bryard 2 339—Transylvania Co	Transylvania Hospital	Cen	Indep	20	12	3	No	R N	1927
Burlington 9 737—Alamance Co	Raines Hospital	Gen	Part	43	24	3	No	R N	1910
Charlotte 82 60—Mecklenburg Co	Charlotte Eye Ear and Throat Ho pital	EENT	Part	22	15		No	R N	192
Good Samaritan Hospital (col)	Gen	Church	52	23	4	No	R N	1888	
Mercy Hospital	Cen	Church	64	37	13	No	R N	1906	
New Charlotte Sanat	Gen	Indep	90	69	10	No	R N	1907	
Prebyterian Ho pital	Gen	Church	100	78	20	No	Lay	1901	
St. Peter's Hospital	Gen	Church	64	54	12	No	R N	18 6	
Cherokee—Swain Co	Eastern Cherokee Indian Hospital	Gen	Indian	22	12	2	Yes	I ay	191
Concord 11 820—Cabarrus Co	Concord Hospital	Gen	Indep	20	16	5	No	R N	1910
Crossnore 181—Avery Co	Garrett Memorial Ho pital	Gen	Indep	19	5	3	Yes	M D	1920
Durham 52 037—Durham Co	Duke Hospital	Cen	Indep	416	200	50	Yes	I ay	19 0
Lincoln Hospital (col)	Cen	Indep	99	71	9	Yes	M D	1901	
McPherson Hospital	EENT	Indiv	20	7		No	R N	19 0	
Watts Hospital	Cen	Indep	156	90	24	Yes	I ay	189	
Elizabeth City 10 0 6—Pasquotank Co	Albemarle Hospital	Gen	Indep	32	12	6	No	R N	1920
Erwin 4 000—Harnett Co	Good Hope Hospital	Indus	Indus	34	10	8	Yes	R N	1910
Fayetteville 13 043—Cumberland Co	Highsmith Hospital	Gen	Indep	100	63	6	Yes	M D	1899
Pittman Hospital	Gen	Indep	80	58	8	No	R N	1919	
Fletcher 10—Henderson Co	Mountain Sanit & Hosp	Gen	Indep	30	15		No	M D	1910
Fort Bragg—Cumberland Co	Station Hospital	Gen	Army	100	60	12	Yes	M D	1919
Franklin 1 094—Macon Co	Angel Brothers Hospital	Cen	Indiv	48	40	2	Yes	M D	1921
Lyle Hospital	Cen	Indiv	20	10		No	M D	1910	
Gastonia 1 093—Gaston Co	City Hospital	Cen	Indep	60	10	0	Yes	R N	1909
Gaston Sanatorium	Cen	Indep	40	20	8	Yes	R N	1917	
North Carolina Orthopedic Hosp for Crippled Chil	Ortho	State	160	130		Yes	R N	1921	
Goldshoro 14 98—Wayne Co	Coldsboro City Hospital	Cen	Indep	7	40	8	No	R N	1890
Spicer's Sanatorium	Cen	Indiv	2	10		Yes	R N	1914	
State Hospital (col)	N&M	State	1 911	1 000		No	M D	18 0	
Crenshaw 2 69—Guilford Co	Chinic Ho pital	Cen	Indep	40	20	0	No	R N	1910
Clenwood 1 Ark Sanitarium	N&M	Indiv	30	20		No	M D	1 0	
Reaves Eye Ear and Throat Infirmary	EENT	Indiv	1			No	M D	1 0	
I Richardson Memorial Ho pital (col)	Cen	Indiv	4	20	0	Yes	M D	1907	
St. Leo's Hospital	Cen	Church	100	64	10	No	R N	1900	
Sternberger Children's Hos	Ortho	Indiv	20	10		Yes	R N	1900	
Weley Long Hospital	Gen	Indiv	60	40	11	No	I ay	1 0	
Greenville 9 194—Pitt Co	Pitt Community Hospital	Gen	Indep	20	14	4	No	M D	1920
Halifax 321—Halifax Co	Halifax County Tuberculois Sanitarium	TB	County	24	20		No	R N	1 0
Hamlet 4 801—Richmond Co	Hamlet Ho pital	Cen	Indep	0			No	R N	1910
Hender on 6 44—Vance Co	Jubilee Ho pital (col)	Cen	Church	0	17	0	No	R N	1911
Marin Parkham Ho pital	TP	County	14	11		Yes	I ay	1	
Scott Parker Sanatorium	Cen	County	10	1		Yes	I ay	1	
Vance County Ho pital	Cen	County	10	1		Yes	I ay	1	
Hendersonville 0 0—Hender on Co	Fdgmont Sanatorium	TB	Indiv	24			No	M D	1 07
Patton Memorial Ho pital	Gen	Indiv	11			Yes	I ay	1 07	
Hickory 7 73—Catawba Co	Richard Baker Ho pital	Cen	Indiv	0	4		No	R N	1911
High Point 7 74—Guilford Co	High Point General Ho pital	Cen	Part	2			No	M D	1 17
High Point Ho pital	Cen	Indiv	2			No	I ay	1 17	
Hunterville 00—Mecklenburg Co	Mecklenburg Sanatorium	TB	County	160	140		No	M D	1
Hamlet 1 00—Guilford Co	Guilford Co Sanat for the Treatment of Tuberc	TB	County	10	100		Yes	M D	1 0

NORTH CAROLINA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt. M.D. R.N. Layman	Year Est.
Kinston 11362—Lenoir Co	Men	DefState	100	30		No	M D	1911
Caswell Training School	Gen	Indep	2	10		No	M D	1923
Memorial General Hospital	Gen	Indep	50	22	10	No	M D	1906
Parrott Memorial Hospital	Gen	Indep						
Leaksville 1814—Rockingham Co	Gen	Indep	30	20	5	No	M D	1924
Leaksville Hospital	Gen	Indep						
Lenoir 6532—Caldwell Co	Gen	Indep	20	10	3	Yes	M D	1926
Caldwell Hospital	Gen	Indep						
Lexington 9652—Davidson Co	Gen	Indiv	24	12	6	No	R N	1924
Davidson Hospital	Gen	Indiv						
Lincolnton 3781—Lincoln Co	Gen	Indep	12	New		No	R N	1930
Gamble Clinic	Gen	Indiv	40	20	3	No	R N	1907
Lincoln Hospital	Gen	Indiv						
Lumberton 4140—Robeson Co	Gen	Indiv	60	37	5	Yes	R N	1921
Baker Sanatorium	Gen	Indep	20	22	3	No	M D	1926
Thompson Memorial Hosp	Gen	Indep						
Marion 2467—McDowell Co	Gen	Indep						
Marion General Hospital	Gen	Indep	20	13	3	No	R N	1924
Monroe 6100—Lincoln Co	Gen	Indiv	60	30	4	Yes	M D	1921
Allen Fitzgerald Hospital	Gen	Indiv	16	3	3	Yes	M D	1912
Quality Hill Sanat (col)	Gen	Indiv						
Mooreville 5619—Iredell Co	Gen	Indiv	30	18	4	No	R N	1926
Lowrance Hospital	Gen	Indep						
Morehead City 3489—Currituck Co	Gen	City	20	15	5	Yes	R N	1911
Morehead City Hospital	Gen	City						
Morganton 6001—Burke Co	N&M	Part	80	42		No	M D	1901
Broadlands Sanatorium	N&M	Part	52	18	10	Yes	R N	1906
Grace Hospital	N&M	Part	2043	1840		No	M D	1882
State Hospital for Insane	N&M	Part						
Mt Airy 604—Surry Co	Gen	Indiv	44	20	6	No	R N	1915
Martin Memorial Hospital	Gen	Indiv						
New Bern 11381—Craven Co	Gen	Part	30	10	5	Yes	R N	1915
St Luke's Hospital	Gen	Part						
North Wilkesboro 3668—Wilkes Co	Gen	Indiv	20	15	2	No	Jay	1923
Wilkes Hospital	Gen	Indiv						
Oteen 501—Buncombe Co	Gen	Indiv	612	81		No	M D	1920
U S Army Hosp No 60	TB	Indiv	612	81		No	M D	1920
Oxford 4101—Granville Co	Gen	Part	30	10	1	No	R N	1920
Brantwood Hospital	Gen	Part	30	10	1	No	R N	1920
Susie Clay Cheatham Memorial Hospital (col)	Gen	Indep	14	7		No	R N	1927
Pinehurst 5—Moore Co	Gen	Indep	31	23	6	Yes	M D	1920
Moore County Hospital	Gen	Indep	31	23	6	Yes	M D	1920
Raleigh 37379—Wake Co	Gen	Indiv	30	18	7	No	Jay	1914
Mary Elizabeth Hospital	Gen	Indiv	30	18	7	No	Jay	1914
McCauley Private Hospital (col)	Gen	Indiv	12	1	2	No	M D	1923
Reynoldsville 6801—Rockingham Co	Gen	Indiv	110	87	10	Yes	R N	1899
Annie Penn Mem Hospital	Gen	Indiv	90	67	10	Yes	R N	1899
Roanoke Rapids 3404—Halifax Co	Gen	Indiv	2100	1700		No	M D	1846
Roanoke Rapids Hospital	Gen	Indiv	88	60	12	Yes	Jay	1912
Rocky Mount 21412—Nash Co	Gen	Indiv	50	33		Yes	R N	1892
Atlantic Coast Line Hosp	Indus	Indus	100	9	6	Yes	R N	1914
Park View Hospital	Gen	Indep	50	33		Yes	R N	1913
Rocky Mount Sanitarium	Gen	Indep						
Rutherfordton 2020—Rutherford Co	Gen	Indep	60	2	4	Yes	R N	1906
Rutherford Hospital	Gen	Indep						
Salisbury 16051—Rowan Co	Gen	Indep	50	30	10	No	R N	1900
Salisbury Hospital	Gen	Indep						
Sanatorium 57—Hoke Co	Gen	Indep						
North Carolina Sanat for Treatment of Tuber	TB	State	400	80		Yes	M D	1907
Sanford 420—Lee Co	Gen	Indiv	30	18	3	Yes	R N	1906
Central Carolina Hospital	Gen	Indiv	30	18	3	Yes	R N	1906
Scott Hospital	Gen	Indiv	30	18	3	Yes	R N	1906
Shelby 10709—Cleveland Co	Gen	Indiv	40	20	5	Yes	R N	1922
Shelby Hospital	Gen	Indiv	40	20	5	Yes	R N	1922
Smithfield 244—Johnston Co	Gen	Indiv	12	5	2	Yes	R N	1920
Kurlong's General Hospital (col)	Gen	Indiv	12	5	2	Yes	R N	1920
Johnston County Hospital	Gen	Indiv	12	5	2	Yes	R N	1920
Southern Pines 224—Moore Co	Gen	Indiv	12	5	2	Yes	R N	1920
Pine Crest Manor Sanat	TB	Indep	60	44		No	M D	1922
Southport 1760—Brunswick Co	Gen	County	30	8	0	No	R N	1930
Brunswick County Hosp	Gen	County	30	8	0	No	R N	1930
Statesville 10490—Iredell Co	Gen	Indep	100	50	8	Yes	M D	1919
Davis Hospital	Gen	Indiv	100	50	8	Yes	M D	1919
Long's Sanatorium	Gen	Indiv	50	30	6	Yes	R N	1901
Larboro 670—Edgecombe Co	Gen	Indiv	35	19	1	No	R N	1922
Edgecombe County Puber	Gen	Indiv	35	19	1	No	M D	1916
Edgewood Sanatorium	TB	County	35	19	1	No	R N	1922
Edgewood General Hosp	Gen	County	35	19	1	No	M D	1916
Thomasville 10090—Davidson Co	Gen	City	33	10	3	Yes	R N	1930
City Memorial Hospital	Gen	City	33	10	3	Yes	R N	1930
Iron 1670—Polk Co	Gen	Indiv	30	10	3	Yes	R N	1920
St Luke's Hospital	Gen	Indiv	30	10	3	Yes	R N	1920
Wadesboro 3124—Anson Co	Gen	Indiv	40	20	5	No	M D	1913
Anson Sanatorium	Gen	Indiv	40	20	5	No	M D	1913
Washington 7035—Beaufort Co	Gen	Indiv	12	10	5	Yes	R N	1924
Riverview Hospital	Gen	Indiv	12	10	5	Yes	R N	1924
Washington Hospital	Gen	Indiv	12	10	5	Yes	R N	1924
Waynesville 2414—Haywood Co	Gen	County	56	1	4	No	R N	1927
Haywood County Hospital	Gen	County	56	1	4	No	R N	1927
Whitaker 36—Madison Co	Gen	Church	14	4		Yes	M D	1919
Laurel Hospital	Gen	Church	14	4		Yes	M D	1919
Wilmington 32270—New Hanover Co	Gen	Indiv	30	10	3	No	R N	1921
Bulluck Hospital	Gen	Indiv	30	10	3	No	R N	1921
Community Hospital (col)	Gen	Indiv	24	14	4	Yes	R N	1920
James Walker Mem Ho p	Gen	Indiv	130	81	20	Yes	Lay	1901
Red Cross Sanatorium	TB	Indiv	30	2		No	M D	1912
Wilson 12613—Wilson Co	Gen	Indiv	50	27	10	Yes	M D	1910
Carolina General Hospital	Gen	Indiv	50	27	10	Yes	M D	1910
Moore Herring Hospital	Gen	Indiv	50	27	10	Yes	M D	1910

NORTH CAROLINA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basins	Outpatient Dept	Supt. M.D. R.N. Layman	Year Est
Winston Salem 70274—Forsyth Co	Gen	City	220	76	15	Yes	M D 1910	
City Memorial Hospital	Gen	City	220	76	15	Yes	M D 1910	
Forsyth Co Puber Sanat	TB	County	182	132	13	Yes	M D 1911	
Lawrence Clinic	Gen	Indiv	50	24	5	No	R N 1919	
North Carolina Baptist Hospital	Gen	Church	90	59	16	No	Lay 1922	
Wrightsville Sound 23—New Hanover Co	Gen	Church	90	59	16	No	Lay 1922	
Babies Hospital	Chil	Indep	35	12	5	No	Lay 1900	
Related Institutions								
Asheville 50193—Buncombe Co	TB	Indiv	17	10	No	Lay 1927		
Brookside Cottage	TB	Indiv	30	18	No	Lay 1924		
Elmhurst Cottage Sanat	TB	Indiv	30	18	No	Lay 1924		
Oakland Sanatorium	TB	Part	23	16	No	R N		
Royce Cottage	TB	Indiv	30	15	No	Jay 1920		
Sherwood Sanatorium	TB	Indiv	20	12	No	R N 1900		
Smith White Sanat (col)	TB	Part	18	10	8	No	M D 1923	
Barium Springs—Iredell Co	Inst 1	Church	40	3	Yes	Lay 1901		
Presbyterian Orphans Home	Inst 1	Church	40	3	Yes	Lay 1901		
Biltmore 172—Buncombe Co	Inst 1	Church	40	3	Yes	Lay 1901		
Ontario Lodge	Inst 1	Church	40	3	Yes	Lay 1901		
Candler 50—Buncombe Co	Inst 1	Church	40	3	Yes	Lay 1901		
Pisgah Sanatorium	Inst 1	Church	40	3	Yes	Lay 1901		
Chapel Hill 200—Orange Co	Inst 1	State	42	7	Yes	R N 1900		
University Infirmary	Inst 1	State	42	7	Yes	R N 1900		
Charlotte 62673—Mecklenburg Co	Inst 1	State	42	7	Yes	R N 1900		
Flornice Crittenton Industrial Home	Inst 1	State	42	7	Yes	R N 1900		
Union League Baby Hosp	Inst 1	State	42	7	Yes	R N 1900		
Thompson Orphanage and Training Institution	Inst 1	State	42	7	Yes	R N 1900		
Davidson 144—Mecklenburg Co	Inst 1	State	42	7	Yes	R N 1900		
Davidson College Infirmary	Inst 1	State	42	7	Yes	R N 1900		
Fayetteville 13049—Cumberland Co	Inst 1	State	42	7	Yes	R N 1900		
Jayettesville Eye Ear Nose and Throat Hospital	Inst 1	State	42	7	Yes	R N 1900		
Caston 17001—Caston Co	Inst 1	State	42	7	Yes	R N 1900		
Caston Colored Hospital	Inst 1	State	42	7	Yes	R N 1900		
Greensboro 33500—Cullford Co	Inst 1	State	42	7	Yes	R N 1900		
Pennar Sanatorium	Inst 1	State	42	7	Yes	R N 1900		
Hendersonville 5070—Henderson Co	Inst 1	State	42	7	Yes	R N 1900		
Dixon Health Resort	Inst 1	State	42	7	Yes	R N 1900		
Highlands 443—Macon Co	Inst 1	State	42	7	Yes	R N 1900		
Brookside Camp	Inst 1	State	42	7	Yes	R N 1900		
Morganton 6001—Burke Co	Inst 1	State	42	7	Yes	R N 1900		
North Carolina School for the Deaf	Inst 1	State	42	7	Yes	R N 1900		
Newton 4394—Catawba Co	Inst 1	State	42	7	Yes	R N 1900		
Catawba County Hospital	Inst 1	State	42	7	Yes	R N 1900		
Oxford 4101—Cramville Co	Inst 1	State	42	7	Yes	R N 1900		
Win 1 Hicks Mem Hosp	Inst 1	State	42	7	Yes	R N 1900		
Raleigh 37379—Wake Co	Inst 1	State	42	7	Yes	R N 1900		
Methodist Orphanage Infr	Inst 1	State	42	7	Yes	R N 1900		
North Carolina State School for the Blind and Deaf	Inst 1	State	42	7	Yes	R N 1900		
Wake County Home Hosp	Inst 1	State	42	7	Yes	R N 1900		
Saluda 508—Polk Co	Inst 1	State	42	7	Yes	R N 1900		
Infants & Children's Sanit	Inst 1	State	42	7	Yes	R N 1900		
Spartanburg Baby Hosp	Inst 1	State	42	7	Yes	R N 1900		
Samareand 113—Moore Co	Inst 1	State	42	7	Yes	R N 1900		
State Home and Industrial School for Girls	Inst 1	State	42	7	Yes	R N 1900		
Tarboro 6340—Edgecombe Co	Inst 1	State	42	7	Yes	R N 1900		
Bass Memorial Hospital	Inst 1	State	42	7	Yes	R N 1900		
Thomasville 10090—Davidson Co	Inst 1	State	42	7	Yes	R N 1900		
Mills Home Infirmary	Inst 1	State	42	7	Yes	R N 1900		
Wale Forest 1536—Wake Co	Inst 1	State	42	7	Yes	R N 1900		
Wake Forest College Hosp	Inst 1	State	42	7	Yes	R N 1900		
Weaver's 548—Buncombe Co	Inst 1	State	42	7	Yes	R N 1900		
Bethel Home	Inst 1	State	42	7	Yes	R N 1900		
Winston Salem 75274—Forsyth Co	Inst 1	State	42	7	Yes	R N 1900		
Children's Home	Inst 1	State	42	7	Yes	R N 1900		
Summary for North Carolina								
Hospitals and sanatoriums	Number	Beds	Patients	Basins				
Related Institutions	34	937	440	30				
Totals	172	16424	10742	703				
Refused registration	9	200		3				

NORTH DAKOTA</

NORTH DAKOTA—Continued										
Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Bassinets	Outpatient Dept	Supt. R N	MD	Layman	Year Est
Carrington 1717—Hester Co	Cen	Indep	20	6	4	No	R N			1916
Carrington Hospital										
Devils Lake 5431—Ramsey Co	Gen	Indep	46	17	6	No	R N			1908
General Hospital										
Mercy Hospital and Mercy Detention Hospital	Gen	Church	70	31	12	No	R N			1902
Dickinson 5023—Stark Co	Cen	Church	62	23	10	No	Lay			1911
St Joseph's Hospital										
Drayton 509—Pembina Co	Gen	Indep	14	12	2	Yes	R N			1906
Drayton Hospital										
Edgley 591—LaMoure Co	Gen	Indiv	12	7		No	M D			1920
Edgley Hospital										
Fargo 28619—Cass Co	Cen	Church	167	86	73	No	R N			1900
St John's Hospital										
St Luke's Hospital	Cen	Church	123	79	17	No	R N			1901
U S Veterans Hospital	Gen	VetBur	57	46		Yes	M D			1920
Standing Rock Indian Hos	Cen	Indian	76	19		Yes	Lay			1911
Grafton 3136—Walsh Co	Cen	Church	0	29	6	No	R N			1904
Grafton Deaconess Hosp										
North Dakota Institution for the Feeble-minded	FeMI	State	694	619		No	M D			1902
Grand Forks 1112—Grand Forks Co	Cen	Indep	81	49	21	No	Lay			1898
Grand Forks Deaconess Hospital										
St Michael's Hospital	Cen	Church	60	15	15	Yes	Lay			1907
Harvey 2157—Wells Co	Gen	Indiv	20	9	6	No	M D			1926
Reimche Memorial Hospital										
Jamestown 187—Stutsman Co	Gen	Church	80	41	13	No	R N			1914
North Dakota State Hospital for Insane	N CM	State	1600	1500		No	M D			1883
Trinity Hospital	Gen	Church	80	41	13	No	R N			1914
Kenmare 1494—Ward Co	Gen	Church	43	12	5	No	R N			1912
Kenmare Deaconess Hosp										
Mandan 5637—Morton Co	Gen	Church	31	16	6	No	R N			1910
Mandan Deaconess Hosp										
McVille 313—Nelson Co	Gen	Indep	1	6	1	No	R N			1917
Community Hospital										
Minot 1609—Ward Co	Gen	Indiv	14	11	1	No	M D			1915
McConnell's Private Hosp	FE N I	Indiv	86	7	14	No	Lay			1911
St Joseph's Hospital	Cen	Church	173	90	16	No	Lay			1922
Trinity Hospital										
New Rockford 219—Eddy Co	Gen	Indiv	10	4	2	No	Lay			1914
Donahue Hospital										
Northwood 911—Grand Forks Co	Gen	Indep	31	7	4	No	R N			1900
Northwood Deaconess Hospital and Home										
Rolette 425—Rolette Co	Gen	Indiv	11	5	6	No	M D			1917
Hayhurst Hospital										
Rugby 1312—Pierce Co	Gen	Church	41	17	12	No	R N			1906
Good Samaritan Hospital										
North Haven—Rolette Co	TB	State	240	194		No	M D			1912
North Dakota State Tuberculosis Sanatorium										
Valley City 5768—Barnes Co	Gen	Church	75	35	12	No	R N			1928
Mercy Hospital										
Wahpeton 3176—Richland Co	Gen	Part	29	13	5	No	Lay			1916
Wahpeton Hospital										
Williston 3106—Williams Co	Gen	Church	43	18	7	Yes	R N			1930
Good Samaritan Hospital										
Mercy Hospital	Cen	Church	73	21	10	No	Lay			1920
Related Institutions										
Arthur 379—Cass Co	Incur	Church	103	96		No	Lay			1923
Evangelical Lutheran Good Samaritan Home										
Arvilla 163—Grand Forks Co	Inst I	County	75	54		No	Lay			1890
Grand Forks Co Hospital										
Beach 1763—Golden Valley Co	Gen	Indep	10	2	4	No	R N			1923
Beach Community Hosp										
Bismarck 11099—Burleigh Co	Inst I	State	73	18		No	Lay			1903
North Dakota State Penitentiary Hospital										
Cando 1164—Towner Co	Gen	Indiv	7	1	5	No	R N			1921
Cando Hospital										
Flora 30—Grant Co	Gen	Indep	7	4	3	No	M D			1924
Community Hospital										
Fargo 28619—Cass Co	Mater	Indiv	15	6	9	No	Lay			1904
Camp Maternity Hospital										
Cass County Hospital	Inst I	County	30	20		No	R N			1881
City Detention Hospital	Iso	City	40	2		No	M D			1911
Florence Crittenton Home	Mater	Indep	11	4	36	No	Lay			1914
Fort Totten 61—Benson Co	Inst I	Indian	30	12		Yes	M D			1907
Fort Totten Indian School Hospital										
Grand Forks 1112—Grand Forks Co	Iso	City	18	6	3	No	Lay			
Grand Forks City Hosp										
Linton 1162—Emmons Co	Gen	Indiv	7	3	5	No	M D			1913
Wolverton Hospital										
Lisbon 1630—Ransom Co	Gen	Part	8	3	2	No	M D			1903
Lisbon Hospital										
Mayville 1199—Trill Co	Gen	Indep	7	5	1	No	Lay			1898
Union Hospital										
Wahpeton 3176—Richland Co	Inst I	Indian	24	9		No	Lay			1911
Wahpeton Indian School Hospital										
Summary for North Dakota										
Hospitals and sanatoriums	Number	Beds	Patients	Bassinets						
Related Institutions	10	400	41	304						
		180	224	73						
Totals	54	4940	3650	6						
Refined Registration	5	6								

OHIO										
Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Bassinets	Outpatient Dept.	Supt. M D	R N	Layman	Year Est.
Akron 25040—Summit Co										
Akron Eye Ear Nose and Throat Hospital	FE N T	Part	11	4		No	M D			1917
Children's Hospital	Chil	Indep	110	80		Yes	Lay			1891
City Hospital	Cen	Indep	312	183	38	Yes	Lay			1892
Peoples Hospital	Cen	Indep	160	113	38	Yes	Lay			1914
St Thomas Hospital	Cen	Church	133	93	29	No	R N			1908
Alliance 23047—Stark Co	Gen	City	80	37	13	No	Lay			1900
Alliance City Hospital										
Amherst 2844—Lorain Co	Gen	Indep	16	10	5	No	Lay			1917
Amherst Hospital										
Ashland 11141—Ashland Co	Gen	Indep	26	20	12	No	R N			1910
Samaritan Hospital										
Ashtabula 23301—Ashtabula Co	Gen	Indep	64	44	17	No	R N			1902
Ashtabula General Hosp										
Athens 7732—Athens Co	N CM	State	1430	1440		No	M D			1874
Athens State Hospital										
Sheltering Arms Hospital	Gen	Indiv	19	7	3	No	R N			1921
Barberton 23934—Summit Co	Gen	Indep	51	32	14	No	Lay			1914
Citizens Hospital										
Bedford 6514—Cuyahoga Co	Gen	City	24	13	5	No	Lay			1925
Bedford Municipal Hosp										
Bellaire 1332—Belmont Co	Cen	Indep	43	24	5	No	R N			1916
City Hospital										
Bellefontaine 1542—Logan Co	FE N I	Indiv	10	4		No	R N			1919
Harbert Hospital										
Mary Rutan Hospital	Gen	City	31	7	10	No	R N			1919
Bellevue 6236—Huron Co	Gen	Indep	29	13	6	No	R N			1917
Bellevue Hospital										
Berea 3697—Cuyahoga Co	Gen	Indep	31	23	9	No	R N			1921
Community Hospital										
Bucyrus 10027—Crawford Co	Gen	Indep	21	10	4	No	R N			1906
Monnette Memorial Hosp										
Cambridge 14613—Guernsey Co	Gen	Indiv	24	5	4	No	M D			1919
Swan Hospital	Gen	Indep	42	18	8	Yes	M D			1922
Wells Hospital										
Canton 104906—Stark Co	Gen	Indep	139	84	24	No	Lay			1890
Aultman Hospital										
Mercy Hospital	Cen	Church	192	91	33	No	R N			1908
Molly Stark Sanatorium	TB	County	146	130		No	M D			1909
Schuffert Little Flower Hospital	(Included in Mercy Hospital)									
Celina 4664—Mercer Co	Gen	Indiv	19	7	4	No	M D			1911
Otis Hospital										
Chillicothe 18340—Ross Co	Gen	Indep	42	0	6	No	Lay			1893
Chillicothe Hospital										
Mt Logan Sanatorium	TB	County	36	48		No	M D			1917
U S Veterans Hosp	N CM	VetBur	614	546		No	M D			1924
Cincinnati 43160—Hamilton Co	Cen	Church	940	190	60	Yes	Lay			1896
Bethesda Hospital										
Children's Hospital	Chil	Church	116	91		Yes	R N			1883
Chr st Hospital	Gen	Church	763	160	48	Yes	Lay			1889
Christian R Holmes Hosp	Gen	City	48	13		No	R N			1917
Cincinnati Gen Hosp	Cen	City	860	699	61	Yes	M D			1891
Cincinnati Sanitarium	N CM	Indep	121	87		No	M D			1881
Deaconess Hospital	Gen	Church	150	108	23	No	Lay			1883
Derrick T Vails Private Hospital	FE N I	Indiv	18	9		No	M D			1906
Good Samaritan Ho p	Cen	Church	475	293	71	Yes	Lay			1882
Grandview Hospital	N CM	Indiv	40	26		No	M D			1900
Hamilton Co TB Sanat	TB	County	364	342		No	M D			1887
Jewish Hospital	Gen	Indep	258	162	60	No	M D			1884
Longview Hospital	N CM	State	2309	108		Yes	M D			1870
Murphy Memorial Hosp	FE N T	Part	14	7	2	No	M D			1911
Ophthalmic Hospital	FE N T	Indiv	10	6		Yes	R N			1880
St Mary Hospital	Gen	Church	206	17		Yes	Lay			1883
Circleville 7769—Pickaway Co	Gen	City	21	6	6	No	R N			1910
Berger Hospital										
Cleveland 900429—Cuyahoga Co	Chil	Indep	140	93	7	Yes	Lay			1921
Babies and Children's Hospital										
Carnegie Avenue Hospital	Gen	Indep	17	7		No	M D			1918
Charity Hospital	Cen	Church	763	29		Yes	R N			1880
City Hospital	Cen	City	1410	97	30	Yes	Lay			1887
Cleveland Clinic Hospital	Cen	Indiv	229	14		No	R N			1884
Cleveland State Hosp	N CM	State	2309	2328		No	M D			1881
East 10th Street Hospital	Cen	Indiv	60	1	1	No	Lay			1911
Evangelical Hospital	Gen	Church	109	3	1	No	Lay			1881
Evangelical Lutheran Hos pital	Cen	Church	138	76	11	No	Lay			1883
Fairview Park Ho pital	Gen	Church	81	67	18	Yes	Lay			1914
Glenville Hospital	Cen	Indep	81	17		Yes	Lay			1910
Grace Ho pital	Gen	Indiv	40	24		No	R N			1910
Hanna House (Included in Huron Road Ho pital)	Jake Ide Ho pital									
Huron Road Ho pital	Cen	Indiv	104	93	16	Yes	M D			1894
Lakeside Hospital	Cen	Indiv	316	21		Yes	Lay			1911
Maternity Ho pital	Mater	Indiv	110	84	10	Yes	Lay			1911
Mt Sinai Hospital	Gen	Indep	22	10	4	Yes	M D			1910
Polyclinic Ho pital	Cen	Indiv	50	40	16	No	M D			1911
Provident Hospital	Gen	Indiv	1	1	1	No	Lay			1911
St Alexis Ho pital	Gen	Church	220	107		Yes	M D			1914
St Ann's Maternity Ho pital	Mater	Church	9	47		No	R N			1911
St John's Hospital	Gen	Church	154	10	4	Yes	R N			1911
St Luke's Ho pital	Cen	Church	74	11	10	Yes	M D			1911
U S Marine Ho pital	Cen	US M H S	20	20		Yes	M D			1911
Wind or Sanitarium	N CM	Indiv	70	41		No	Lay			1911
Woman's Ho pital	Gen	Indiv	8	6	7	No	R N			1911
Columbu 30041—Franklin Co	Chil	Indep	100	6	1	Yes	Lay			1911
Children's Hospital										
Columbu Radium Ho p	Cen	Indiv	41	4		No	Lay			1911
Columbus State Ho pital	N CM	State	2309	108		No	M D			1911
Franklin County Sanat	TB	County	210	1		Yes	M D			1914
Dr Caver Sanitarium	N CM	Indiv	21	21		No	M D			1911
Grant Ho pital	Cen	Indiv	21	21		Yes	R N			1911

OHIO—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt M.D. R.N. Layman	Year Est
Institution for Feeble Minded	Men	Def State	2 117	2 100	No	MD	1897	
McMillen Sanitarium	N & M	Indep	40	26	No	MD	1901	
Mersey Hospital	Gen	Indep	80	55	12	Yes	R N	1904
Mt Carmel Hospital	Gen	Church	214	153	25	No	R N	1886
St Ann's Infant & Maternity Hospital	Mater	Church	25	17	25	No	Lay	1908
St Clair Hospital	Gen	Indep	35	20	3	Yes	R N	1910
St Francis Hospital	Gen	Church	125	100	No	Lay	1865	
Sanor Lye Ear Nose and Throat Hospital	ENT	Indiv	20	5	No	R N	1912	
Starling Loving University Hospital	Gen	State	240	147	16	No	R N	1914
Station Hospital	Gen	Army	60	21	Yes	MD	1884	
White Cross Hospital	Gen	Church	287	160	70	Yes	Lay	1892
Cortland 940—Trumbull Co	Gen	Indiv	10	4	3	No	Lay	1916
Dr McCurley's Priv Hosp	Gen	Indiv	10	4	3	No	Lay	1916
Coshocton 10408—Coshocton Co	Gen	City	40	22	6	No	R N	1912
Coshocton City Hospital	Gen	City	40	22	6	No	R N	1912
Crestline 442—Crawford Co	Gen	Indep	15	3	4	No	Lay	1917
Crestline Emergency Hosp	Gen	Indep	15	3	4	No	Lay	1917
Cuyahoga Falls 19797—Summit Co	N & M	Indep	65	50	No	Lay	1894	
Fair Oaks Villa and Cottages	N & M	Indep	65	50	No	Lay	1894	
Dayton 20098—Montgomery Co	N & M	State	1 41	1 707	Yes	MD	1885	
Dayton State Hospital	N & M	State	1 41	1 707	Yes	MD	1885	
Miami Valley Hospital	Gen	Indep	3 32	3 34	44	Yes	MD	1890
Orchard Springs Sanit	N & M	Indep	2	20	No	MD	1911	
St Ann's Maternity Hospital (Mater Dept of St Elizabeth's Hosp)	Gen	Church	385	288	35	Yes	Lay	1898
St Elizabeth's Hospital	Gen	Church	385	288	35	Yes	Lay	1898
Stillwater Sanitarium	Dis	County	94	60	No	R N	1908	
Trick Tuberculosis Hosp	TB	County	94	60	No	R N	1908	
Defiance 818—Defiance Co	Gen	Indep	15	8	4	No	R N	1916
Defiance Hosp	Gen	Indep	15	8	4	No	R N	1916
Dennison 4529—Lucas Co	Gen	Indep	30	0	5	No	R N	1917
Twin City Hospital	Gen	Indep	30	0	5	No	R N	1917
Dover 2457—Lucas Co	Gen	Indep	75	35	10	No	R N	1908
Union Hospital	Gen	Indep	75	35	10	No	R N	1908
East Akron—Summit Co	TB	County	240	239	Yes	MD	1915	
Springfield Lake Sanat	TB	County	240	239	Yes	MD	1915	
East Liverpool 23390—Columbiana Co	Gen	City	75	50	10	Yes	R N	1896
East Liverpool City Hosp	Gen	City	75	50	10	Yes	R N	1896
Elyria 25633—Lorain Co	Gen	Indep	20	13	No	R N		
Elyria Clinic Hospital	Gen	Indep	20	13	No	R N		
Elyria Memorial Hosp	Gen	Indep	14	77	20	No	Lay	1900
Gates Hospital for Crippled Children (Included in Elyria Mem Hosp)	Gen	Indep	14	77	20	No	Lay	1900
Findlay 19363—Hancock Co	Gen	City	63	29	12	No	R N	1895
Home and Hospital	Gen	City	63	29	12	No	R N	1895
Fremont 13472—Sandusky Co	Gen	Indiv	13	10	4	No	MD	1927
Community Hospital	Gen	Indiv	13	10	4	No	MD	1927
Memorial Hospital of Sandusky County	Gen	County	60	30	8	No	R N	1918
Gallion 7674—Crawford Co	Gen	City	12	6	3	No	R N	1913
Good Samaritan Hospital	Gen	City	12	6	3	No	R N	1913
Gallipolis 7106—Gallia Co	Gen	Indiv	51	34	4	Yes	MD	1910
Holzer Hospital	Gen	Indiv	51	34	4	Yes	MD	1910
Ohio Hosp for Epileptics	Epil	State	2 080	1 933	No	MD	1891	
Greenfield, 3871—Highland Co	Gen	Indep	15	6	3	No		1918
Greenfield Hospital	Gen	Indep	15	6	3	No		1918
Greenville 7036—Darke Co	Gen	Indep	28	14	4	No	R N	1920
Greenville Hospital	Gen	Indep	28	14	4	No	R N	1920
Hamilton 5216—Butler Co	Gen	Indep	120	49	20	Yes	Lay	1929
Fort Hamilton Hospital	Gen	Church	120	49	20	Yes	Lay	1929
Mersey Hospital	Gen	Church	120	49	20	Yes	Lay	1929
Hicksville 2445—Defiance Co	Gen	Indiv	10	4	2	No	R N	1917
Amaden Hospital	Gen	Indiv	10	4	2	No	R N	1917
Hillsboro 4040—Highland Co	Gen	Indep	17	6	4	Yes	R N	1914
Hillsboro Hospital	Gen	Indep	17	6	4	Yes	R N	1914
Ironton 16621—Lawrence Co	Gen	City	32	13	5	No	R N	1895
Charles S Gray Deaconess Hospital	Gen	City	32	13	5	No	R N	1895
Kenton 7069—Hardin Co	Gen	Indep	21	15	5	Yes	R N	1918
McKittick Hospital	Gen	Church	20	4	4	No	Lay	1897
San Antonio Hospital	Gen	Church	20	4	4	No	Lay	1897
LaCarne 150—Ottawa Co	Gen	Army	20	4	Yes	MD	1917	
Station Hospital	Gen	Army	20	4	Yes	MD	1917	
Lakewood 70509—Cuyahoga Co	Gen	Indep	72	55	16	Yes	R N	1907
Lakewood Public Hosp	Gen	Indep	72	55	16	Yes	R N	1907
Wright's Sanitarium	N & M	Indiv	25	16	No	G N	1910	
Lancaster 16716—Fairfield Co	Gen	City	45	37	11	No	R N	1916
Lancaster Municipal Hosp	Gen	City	45	37	11	No	R N	1916
Lima 4987—Allen Co	Gen	County	56	53	No	MD	1911	
District Tuberculosis Hosp	TB	County	56	53	No	MD	1911	
Lima Hospital	Gen	Indep	80	72	10	No	R N	1899
Lima State Hospital	N & M	State	1 040	1 000	No	MD	1914	
St Rita's Hospital	Gen	Church	100	72	16	No	R N	1918
Lodi 123—Medina Co	Gen	Indep	17	7	5	No	R N	1916
Lodi Hospital	Gen	Indep	17	7	5	No	R N	1916
Logan 6080—Hocking Co	Gen	Part	35	12	4	No	MD	1908
Cherrington Hospital	Gen	Part	35	12	4	No	MD	1908
St Joseph Hospital	Gen	Church	100	61	20	No	Lay	1897
Munfield 33525—Richland Co	Gen	Indep	62	65	12	No	R N	1918
Manfield General Hosp	Gen	Indep	62	65	12	No	R N	1918
Thomas Hospital	Gen	Indiv	14	6	4	No	Lay	1922
Marietta 1425—Washington Co	Gen	Indep	50	30	10	No	Lay	1929
Marietta Memorial Hosp	Gen	Indep	50	30	10	No	Lay	1929
Tremont Hospital	Gen	Indiv	15	5	4	No	MD	1920
Marion City Hospital	Gen	City	38	25	12	No	R N	1920
Marion City Hospital	Gen	City	38	25	12	No	R N	1920
Sawyer Sanitarium	N & M	Part	45	35	No	R N	1895	
Martins Ferry 14524—Belmont Co	Gen	Indep	70	48	5	No	R N	1906
Martins Ferry Hospital	Gen	Indep	70	48	5	No	R N	1906
Massillon 26400—Stark Co	Gen	Indep	62	60	14	No	Lay	1909
Massillon Hospital	Gen	Indep	62	60	14	No	Lay	1909
Massillon State Hospital	N & M	State	2 220	2 680	Yes	MD	1898	

OHIO—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt M.D. R.N. Layman	Year Est
McConnelsville 1734—Morgan Co	TB	Indep	120	115	No	Lay		1911
Rocky Glen Sanatorium	TB	Indep	80	45	No	Lay		1929
Mentor 1584—Lake Co	N & M	Indep	100	54	14	Yes	R N	1916
Dulhurst Sanatorium	N & M	Indep	10	4	No	MD		1910
Middletown 29992—Butler Co	Gen	Indep	10	4	No	MD		1910
Middletown Hospital	Gen	Indiv	35	13	10	No	R N	1919
Montpelier 3677—Williams Co	Gen	Indiv	53	42	7	No	R N	1900
Wertz Hospital	Gen	Indiv	10	4	No	MD		1910
Mt Vernon 9140—Knox Co	Gen	Church	65	38	10	No	Lay	1921
Hide Ball Mercy Hospital	Gen	Church	100	40	10	No	R N	1904
Mt Vernon Hospital Sanit	Gen	State	50	23	6	Yes	R N	1900
Ohio State Sanatorium	TB	State	52	51	No	MD		1904
Napoleon 1745—Henry Co	Gen	City	15	7	No	R N		1920
S M Heller Mem Hospital	Gen	City	15	7	No	R N		1920
Newark 40596—Jackson Co	Gen	Indep	50	32	0	No	R N	1914
Newark Hospital	Gen	Indep	20	17	7	No	R N	1917
Norwalk 7776—Huron Co	Gen	Indep	20	17	7	No	R N	1917
Norwalk Memorial Hosp	Gen	Indep	20	17	7	No	R N	1917
Orion 255—Pickaway Co	Gen	Indep	20	17	7	No	R N	1917
Orion Institution for the Deaf	N & M	State	2 400	2 095	Yes	MD		1909
Oxford 2758—Butler Co	N & M	Indep	70	26	No	MD		
Oxford Retreat	N & M	Indep	70	26	No	MD		
Palmsville 1044—Lake Co	Gen	County	60	42	14	No	Lay	1904
Lake County Men's Hosp	Gen	County	60	42	14	No	Lay	1904
Perryburg 7182—Wood Co	Gen	Indiv	10	6	2	No	R N	1928
Community Hospital	Gen	Indiv	10	6	2	No	R N	1928
Rheinfank Hospital	Gen	Indiv	13	12	No	MD		1904
Piquette 16095—Miami Co	Gen	Indep	53	42	7	No	R N	1900
Ball Memorial Hospital	Gen	Indep	53	42	7	No	R N	1900
Pt Clinton 4405—Ottawa Co	Gen	Indiv	16	13	3	No	MD	1900
Pool Hospital	Gen	Indiv	16	13	3	No	MD	1900
Portsmouth 4740—Scioto Co	Gen	Church	65	38	10	No	Lay	1921
Mersey Hospital	Gen	Church	100	40	10	No	R N	1904
Portsmouth Gen Hosp	Gen	City	50	23	6	Yes	R N	1900
Schirrmann Hospital	Gen	Indiv	50	23	6	Yes	R N	1900
St Clairsville 2440—Belmont Co	TB	County	52	51	No	MD		1904
Belmont Sanatorium	TB	County	52	51	No	MD		1904
Salem 10622—Columbiana Co	Gen	Indep	30	21	6	No	MD	1921
Central Clinic and Hospital	Gen	Indep	30	21	6	No	MD	1921
Salem City Hospital	Gen	Indep	48	20	11	No	MD	1911
Sandusky 24622—Frie Co	Gen	Indep	56	35	9	No	R N	1916
Good Samaritan Hospital	Gen	Church	50	28	10	No	Lay	1904
Providence Hospital	Gen	Church	50	28	10	No	Lay	1904
Shelby 6118—Richland Co	Gen	Indep	26	16	5	No	R N	1920
Shelby Memorial Hospital	Gen	Indep	26	16	5	No	R N	1920
Sidney 9061—Shelby Co	Gen	Indep	20	8	5	No	R N	1900
Shelby County Mem Hosp	Gen	Indep	20	8	5	No	R N	1900
South Union 4393—Cuyahoga Co	Ortho	Indep	100	94	No	Lay		1891
Rainbow Hosp for Crip & Convalescent Children	Ortho	Indep	100	94	No	Lay		1891
Springfield 68741—Clark Co	TB	County	12	80	No	MD		1916
Clark County Tuber Sanat	TB	County	12	80	No	MD		1916
Quinn Private Hospital	Gen	Indiv	15	7	6	No	MD	1922
Springfield City Hosp	Gen	City	125	99	25	Yes	Lay	1895
Stuebenville 35422—Jefferson Co	Gen	Indep	30	17	No	R N		1900
Gill Hospital	Gen	Indep	30	17	No	R N		1900
Ohio Valley Hospital	Gen	Indep	116	80	9	No	R N	1919
Tiffin 10425—Seneca Co	Gen	Church	35	22	8	No	Lay	1914
Mersey Hospital	Gen	Church	35	22	8	No	Lay	1914
Toledo 26715—Lucas Co	Gen	Indep	51	16	7	No	Lay	1909
First Side Hospital	Gen	Church	110	80	40	No	R N	1904
Lower Hospital	Gen	Church	110	80	40	No	R N	1904
Lucas Co Branch Hosp	Gen	County	96	7	1	Yes	R N	1918
Lucas County Hospital	Gen	County	100	0	10	No	R N	1904
Lucas Co Tuber Hosp	TB	County	101	12	No	R N		1918
Robey Hospital	Gen	Church	101	85	13	No	Lay	1903
Robinson Hospital	Gen	Church	101	85	13	No	Lay	1903
St Vincent's Hospital	Gen	Church	342	314	4	Yes	R N	1895
Toledo Hospital	Gen	Indep	25	10	30	No	Lay	1896
Toledo Sanitarium	N & M	State	18	12	No	MD		1910
Toledo State Hospital	N & M	State	2 330	2 163	Yes	MD		1898
Women's and Children's Hospital	Gen	Indep	148	63	35	Yes	R N	1885
Troy 8								
Troy 8								
Stouder Memorial Hospital	Gen	City	40	20	7	No	Lay	1929
Urbana 7742—Champaign Co	Gen	County	19	11	4	No	Lay	1914
Champaign County Hosp	Gen	County	40	19	6	No	R N	1916
Van Wert 845—Van Wert Co	Gen	County	40	19	6	No	R N	1916
Van Wert County Hosp	Gen	County	40	19	6	No	R N	1916
Wadsworth 5990—Medina Co	Gen	City	25	15	10	No	R N	1921
Wadsworth Municipal Hos	Gen	City	25	15	10	No	R N	1921
Warren 41062—Trumbull Co	Gen	Church	38	30	10	No	R N	1924
St Joseph's Riverside Hos	Gen	County	50	48	Yes	MD		1925
Trumbull Co Tuber Sanat	TB	County	116	78	18	No	R N	1907
Warren City Hospital	Gen	Indep	116	78	18	No	R N	1907
Warrensille 170—Cuyahoga Co	Gen	Indep	116	78	18	No	R N	1907
Cleveland Municipal Tuber Sanatorium	TB	City	360	318	No	MD		1900
Waucon 2850—Fulton Co	Gen	Indep	52	22	12	Yes	R N	1930
De Jette Harrison Detwiler Memorial Hospital	Gen	Indep	52	22	12	Yes	R N	1930
West Dover 809—Cuyahoga Co	N & M	Indiv	45	31	No	Lay		1919
Cedarcrest Sanitarium	N & M	Indiv	45	31	No	Lay		1919
Willard 4514—Huron Co	Gen	City	24	12	6	Yes	R N	1930
Municipal Hospital	Gen	City	24	12	6	Yes	R N	1930
Williamston 9732—Clinton Co	Gen	Indiv	17	6	7	No	MD	1915
Dr Kelley Hale Surgical Hospital	Gen	Indiv	17	6	7	No	MD	1915
Wooster 10742—Wayne Co	Gen	Indep	25	13	5	No	MD	1905
Knesey & Knestrick Hosp	Gen	Indiv	25	13	5	No	MD	1905
Wooster Hospital	Gen	Indiv	25	13	5	No	MD	1905
Worthington 1739—Franklin Co	N & M	Indep	36	30	No	Lay		1915
Columbus Rural Rest Home	N & M	Indep	36	30	No	Lay		1915
Xenia 10507—Greene Co	Gen	Indep	20	14	4	No	MD	1893
McClellan Hospital	Gen	Indep	20	14	4	No	MD	1893

OHIO—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinsets	Outpatient Dept	Supt M D	R N Layman	Year Est
Youngstown 170 002—Mahoning Co	Gen	County	108	103	Yes	M D	1924		
Mahoning Tuber Sanat	TB	Church	2	148	50	Yes	Ind	1911	
St Elizabeth Hospital	Gen	Indep	3	908	74	Yes	Ind	1882	
Youngstown Hospital	Gen	Indep	3	908	74	Yes	Ind	1882	
Zanesville 30 440—Muskingum Co	Gen	Church	108	63	22	No	R N	1883	
Bethesda Hospital	Gen	Church	12	50	20	No	R N	1900	
Good Samaritan Hospital	Gen	Church	12	50	20	No	R N	1900	
Related Institutions									
Akron 2 5 040—Summit Co	Indus	Indus	2	4	Yes	M D	1907		
Goodyear Hospital and Dispensary	Indus	Indus	2	4	Yes	M D	1907		
Berea 5 634—Cuyahoga Co	Indus	Indus	2	4	Yes	M D	1907		
Cerman Methodist Children's Home	Inst	Church	12	1	No	Ind	1864		
Bluffton 2 03—Allen Co	Gen	Indep	9	6	4	No	Ind	1920	
Bluffton Community Hosp	Gen	Indiv	20	9	2	No	Ind	1909	
Bowling Green 6 68—Wood Co	Gen	Indiv	20	9	2	No	Ind	1909	
Bowling Green Sanitarium and Hospital	Gen	Indiv	20	9	2	No	Ind	1909	
Cambridge 14 613—Cuyahoga Co	Mater	Indep	8	2	8	Yes	M D	1929	
Children's Maternity Hosp	Mater	Indep	8	2	8	Yes	M D	1929	
Candfield 1 015—Mahoning Co	Inst	County	2	20	No	Lay	1912		
Mahoning County Home	Inst	County	2	20	No	Lay	1912		
Chagrin Falls 2 79—Cuyahoga Co	Inst	Church	2	4	No	Lay	1892		
Cleveland Protestant Orphan Asylum	Inst	Church	2	4	No	Lay	1892		
Chardon 1 818—Geauga Co	Mater	Indiv	10	5	4	No	Lay	1920	
Sperry Home	Mater	Indiv	10	5	4	No	Lay	1920	
Cincinnati 401 160—Hamilton Co	Inst	Indep	38	14	No	Lay	1881		
Children's Home	Inst	Indep	38	14	No	Lay	1881		
Dr. Edward E. Thompson Private Eye Ear Nose & Throat Hospital	EFNT	Indiv	6	2	No	Lay	1918		
Erangeline Booth Home & Hospital	Mater	Church	34	11	4	No	Lay	1911	
Home for Incurables	Incur	Indep	62	60	No	R N	1890		
Jewish Convalescent and Foster Home	Conv	Indep	7	14	No	Lay	1911		
Jones and Slitt Hospital for Treatment of Diseases of Ear Nose and Throat	ENT	Part	8	3	No	R N	1924		
Maple Knoll Hospital and Home for the Friendless	Mater	Indep	13	10	12	No	R N	1890	
Methodist Home for the Aged	Inst	Church	37	3	No	Lay	1899		
Psychopathic Inst of the Jewish Hospital	Chil	Indep	12	12	Yes	M D	1920		
Ridge Rest Home	N&M	Indep	35	18	No	R N	1921		
St. Francis Hospital for Incurables	Incur	Church	340	328	No	Lay	1888		
St. Joseph's Infant Asylum and Maternity Hosp	Mater	Church	20	12	10	No	Lay	1891	
St. Michael's Conv. Home	Conv	Indep	28	24	Yes	Lay	1916		
Salvation Army Catherine Booth Home and Maternity Hospital	Mater	Church	40	40	4	No	Lay	1909	
Cleveland 900 470—Cuyahoga Co	Mater	Church	13	6	12	No	Lay	1892	
Booth Memorial Maternity Home and Hospital	Mater	Church	13	6	12	No	Lay	1892	
Children's Fresh Air Camp and Hospital	Conv	Indep	60	12	No	R N	1889		
Fitz Jennings Home	Incur	Indep	60	60	No	Lay	1888		
Emergency Hospital	Emerg	Part	20	17	Yes	M D	1899		
Florence Crittenton Home	Mater	Indep	18	12	13	No	R N	1912	
Holy Cross House for Crip and Invalid Children	Ortho	Church	40	10	No	R N	1893		
Jewish Orphan's Home	Inst	Frat	36	9	No	Lay	1868		
Joanna Private Hospital and Invalids Home	Chron	Indiv	19	19	No	Lay	1911		
St. Luke's Convalescent Hospital for Children	Conv	Church	69	34	No	Lay	1924		
Columbus 290 564—Franklin Co	Mater	Indep	32	23	24	No	Lay	1898	
Florence Crittenton Home	Mater	Indep	32	23	24	No	Lay	1898	
Franklin County Home	Inst	County	12	12	No	Lay	1925		
Home Sanitarium	Inst	Indiv	6	3	No	Lay	1913		
Ohio Penitentiary Hospital	Inst	State	153	116	No	M D	1834		
St. Anthony's Hospital	Inst	Church	263	24	No	Lay	1890		
Corvinton 1 807—Miami Co	Gen	Part	8	5	1	No	M D	1922	
Corvinton Hospital	Gen	Part	8	5	1	No	M D	1922	
Dayton 400 982—Montgomery Co	Mater	Indep	16	8	6	No	Lay	1900	
Dayton Door of Hope	Quarantine	City	2	1	No	Lay	1890		
Quarantine Hospital	Quarantine	City	2	1	No	Lay	1890		
Delaware 8 673—Delaware Co	Inst	State	33	1	No	Lay	1869		
Girls Industrial School Hospital	Inst	State	33	1	No	Lay	1869		
Euchel 19 751—Cuyahoga Co	Conv	Indiv	2	12	No	Lay	1824		
Ream Sanatorium	Conv	Indiv	2	12	No	Lay	1824		
Fairfield 1 470—Greene Co	Gen	Army	12	2	Yes	M D	1911		
Station Hospital	Gen	Army	12	2	Yes	M D	1911		
Flat Rock 360—Seneca Co	Inst	Church	21	3	No	Lay	186		
Phenezer Orphan Home & Hospital	Inst	Church	21	3	No	Lay	186		
Postoria 19 770—Seneca Co	Gen	Indiv	6	2	4	No	Lay	1908	
Postoria Hospital	Gen	Indiv	6	2	4	No	Lay	1908	
Granville 1 467—Licking Co	Inst	Indep	20	2	Yes	M D	1924		
Whisler Hall Venn Hosp	Inst	Indep	20	2	Yes	M D	1924		
Hamilton 1 1 6—Butler Co	TB	County	20	6	No	Lay	1914		
Butler County Home	Inst	Indep	14	4	No	Lay	1904		
Ruth Hospital	Inst	Indep	14	4	No	Lay	1904		
Lancaster 18 716—Fairfield Co	Inst	State	100	50	No	Lay	1900		
Boys Industrial School Hospital	Inst	State	100	50	No	Lay	1900		
Lebanon 1 222—Warren Co	Gen	Part	8	4	2	No	M D	1921	
Blair Brothers Hospital	Gen	Part	8	4	2	No	M D	1921	

OHIO—Continued

Related Institutions	Type of Service	Control	Beds	Average Patients	Basinsets	Outpatient Dept	Supt M D	R N Layman	Year Est
Iima 42 987—Allen Co	Gen	Indep	9	2	Yes	Lay	1921		
Herr's Hospital Clinic	Gen	Indep	9	2	Yes	Lay	1921		
Mansfield 31 25—Richland Co	Inst	State	40	41	No	Lay	1886		
Ohio State Reformatory	Inst	State	40	41	No	Lay	1886		
Marblehead 1 027—Ottawa Co	Indus	Indus	6	2	1	Yes	Lay	1910	
Kelley Island—Olme and Transport Company Hos	Indus	Indus	6	2	1	Yes	Lay	1910	
Marysville 1 650—Union Co	Inst	State	28	12	5	No	Lay	1916	
Ohio Reformatory for Women	Inst	State	28	12	5	No	Lay	1916	
Munroe Falls 502—Summit Co	Inst	County	3	3	2	No	Lay	1914	
Summit Co Home Hosp	Inst	County	3	3	2	No	Lay	1914	
National Military Home—Montgomery Co	Inst	Federal	896	896	No	M D	1899		
National Military Home Hospital	Inst	Federal	896	896	No	M D	1899		
New London 1 327—Huron Co	Gen	Indep	9	3	3	No	R N	1921	
New London Hospital	Gen	Indep	9	3	3	No	R N	1921	
Oberlin 4 792—Lorain Co	Gen	Indep	36	25	5	Yes	R N	1921	
Allen Hospital Oberlin College	Gen	Indep	36	25	5	Yes	R N	1921	
Oxford 7 888—Butler Co	Inst	State	30	9	Yes	M D	1911		
Miami University Students Hospital and Dispensary	Inst	State	30	9	Yes	M D	1911		
Sandusky 24 622—Erie Co	Inst	County	3	22	No	Lay			
Erie County Home Hosp	Inst	County	3	22	No	Lay			
Springfield 68 743—Clark Co	Inst	Frat	40	30	No	Lay	1911		
Ohio Knights of Pythias Home	Inst	Frat	40	30	No	Lay	1911		
Ohio Rebekah Hospital	Inst	Frat	71	59	Yes	Lay	1890		
Rickly Memorial Hospital	Inst	Frat	22	9	No	Lay	1923		
Springfield Eye Ear Nose and Throat Hospital	EENT	Indiv	8	7	Yes	M D	1927		
State Soldiers Home—Frie Co	Inst	State	22	9	No	M D	1888		
Ohio Soldiers and Sailors Home Hospital	Inst	State	22	9	No	M D	1888		
Tiffin 16 428—Seneca Co	Inst	Frat	60	10	No	Lay	1897		
Kentucky Memorial Hosp	Inst	Frat	60	10	No	Lay	1897		
Toledo 290 718—Lucas Co	Inst	Frat	60	10	No	Lay	1897		
Alter Eye Ear Nose and Throat Hospital	FENT	Indiv	30	2	1	No	M D	1924	
City Isolation Hospital	Inst	City	30	2	2	No	R N	1900	
Warrensville 1 507—Cuyahoga Co	Inst	City	85	83	No	Lay	1903		
Cleveland City Infirmary	Inst	City	85	83	No	Lay	1903		
Wilberforce 524—Greene Co	Inst	State	8	1	Yes	M D	1918		
Tawawa Hosp of Wilberforce University (col)	Inst	State	8	1	Yes	M D	1918		
Wooster 10 47—Wayne Co	Inst	Indep	2	4	Yes	M D	1927		
Hygeia Hall	Inst	Indep	2	4	Yes	M D	1927		
Venia 10 10—Greene Co	Gen	Indiv	8	4	2	No	R N	1915	
Lp cy Hospital	Gen	Indiv	8	4	2	No	R N	1915	
Ohio Soldiers and Sailors Orphans Home Hospital	Inst	State	63	2	No	Lay	1870		
Youngstown 1 0002—Mahoning Co	Inst	City	6	3	No	R N	1924		
Youngstown Municipal Hospital	Inst	City	6	3	No	R N	1924		

Summary for Ohio	Number	Beds	Patients	Basinsets
Hospitals and Sanatoriums	206	47 907	3 986	2 314
Related Institutions	73	4 904	2 906	1 679
Totals	279	47 411	3 992	2 411
Refused registration	29	511		

OKLAHOMA

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinsets	Outpatient Dept	Supt M D	R N Layman	Year Est
Ada 11 261—Pontotoc Co	Gen	Indiv	1	9	No	Lay	1923		
Ada Hospital	Gen	Indiv	1	9	No	Lay	1923		
Breco's Hospital	Gen	Indep	12	1	No	M D	1923		
Altus 8 439—Jackson Co	Gen	City	20	6	1	No	R N	1920	
City Hospital	Gen	City	20	6	1	No	R N	1920	
Alva 1 121—Woods Co	Gen	City	1	3	1	Yes	Lay	1911	
Alva Hospital	Gen	City	1	3	1	Yes	Lay	1911	
Ardmore 1 741—Carter Co	Gen	Indiv	40	16	4	No	Lay	1914	
Hardy Sanitarium	Gen	Indiv	40	16	4	No	Lay	1914	
Von Keller Hospital	Gen	Indiv	40	16	4	No	Lay	1914	
Bartlesville 14 141—Washington Co	Gen	County	0	22	10	No	Lay	1911	
Washington County Memorial Hospital	Gen	County	0	22	10	No	Lay	1911	
Beaver 1 028—Beaver Co	Gen	Part	2	9	3	Yes	M D	1924	
Beaver Hospital	Gen	Part	2	9	3	Yes	M D	1924	
Blackwell 9 21—Kay Co	Gen	Indiv	2	1	No	M D	1917		
Blackwell Hospital	Gen	Indiv	2	1	No	M D	1917		
Leslie Sanatorium	Gen	Indiv	2	1	No	M D	1917		
Bristow 6 619—Creek Co	Gen	Part	18	6	2	No	R N	1911	
Bristow General Hospital	Gen	Part	18	6	2	No	R N	1911	
Broken Bow 1 11—Mcurtain Co	Gen	Indiv	10	6	2	No	M D	1910	
Broken Bow Hospital	Gen	Indiv	10	6	2	No	M D	1910	
Butler 47—Custer Co	Gen	Part	1	4	4	Yes	Lay	1911	
Sunnyvale Hospital	Gen	Part	1	4	4	Yes	Lay	1911	
Chandler 71—Lincoln Co	Gen	Indiv	1	4	2	No	R N	1911	
Hancock Hospital	Gen	Indiv	1	4	2	No	R N	1911	
Cherokee 2 1—Alfalfa Co	Gen	Frat	0	18	6	No	R N	1918	
Minonke Hospital	Gen	Frat	0	18	6	No	R N	1918	
Chickasha 14 141—Cady Co	Gen	Part	6	1	0	Yes	Lay	1911	
Chickasha Hospital	Gen	Part	6	1	0	Yes	Lay	1911	
Cottage Hospital	Gen	Indiv	1	1	1	Yes	Lay	1911	
Central Hospital	Gen	Indiv	1	1	1	Yes	Lay	1911	
Claremore 2 1—Roger Co	Gen	Indiv	74	1	1	Yes	M D	1911	
Claremore Indian Hospital	Gen	Indiv	74	1	1	Yes	M D	1911	

OKLAHOMA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt. M. D.	R. N. Layman	Year Est
Clinton 7512—Custer Co	Gen	Indep	34	20	6	No	MD	1911	
Clinton Hospital	Gen	Indep	34	20	6	No	MD	1911	
Western Oklahoma State Tuberculosis Sanatorium	TB	State	208	147		No	MD	1922	
Concho 290—Canadian Co	Gen	Indep	60	70	4	No	MD	1914	
Cheyenne and Arapaho Hospitals	Gen	Indian	60	70	4	No	MD	1914	
Cordell 2936—Washita Co	Gen	Indiv	10	4	2	No	Indy	1909	
Florence Hospital	Gen	Indiv	10	4	2	No	Indy	1909	
Cushing 9701—Payne Co	Gen	Frnt	6	1	4	Yes	R N	1909	
Masonic Hospital	Gen	Part	10	6	4	No	MD	1920	
Davenport 1072—Lincoln Co	Gen	Part	10	6	4	No	MD	1920	
Melick Hospital	Gen	Indiv	12	7	2	No	R N	1923	
Depew 1126—Creek Co	Gen	Indiv	12	7	2	No	R N	1923	
Coppedge Hospital	Gen	Indiv	30	20	6	Yes	R N	1920	
Duncan 8364—Stephens Co	Gen	Indiv	30	20	6	Yes	R N	1920	
Weeden Hospital	Gen	Indiv	30	20	6	Yes	R N	1920	
Flk City 5666—Beckham Co	Gen	Indiv	20	10	8	Yes	R N	1918	
Standifer Hospital	Gen	Indiv	20	10	8	Yes	R N	1924	
Tisdal Hospital	Gen	Indiv	20	10	8	Yes	R N	1924	
LI Reno 9384—Canadian Co	Gen	Indiv	20	10	8	Yes	R N	1920	
Cato Hospital	Gen	Indiv	20	10	8	Yes	R N	1920	
LI Reno Sanitarium	Gen	Indiv	20	10	8	Yes	R N	1920	
Enid 26390—Garfield Co	Gen	Indiv	20	10	8	Yes	R N	1920	
Baptist Hospital	Gen	Church	100	40	10	No	R N	1908	
Mid General Hospital	Gen	Indiv	100	40	10	No	R N	1914	
Mid Springs Sanitarium and Hospital	Gen	Indiv	30	20	4	No	R N	1914	
Oklahoma Institution for the Feeble-minded	Men	State	500	720		No	Indy	1907	
Erick 2231—Beckham Co	Gen	Indiv	7	10	3	No	MD	1921	
Fairfax 2134—Osage Co	Gen	Indiv	7	8	2	No	Indy	1916	
Fairfax Hospital	Gen	Indiv	7	8	2	No	Indy	1916	
It Sill 2000—Comanche Co	Gen	Army	140	6	6	Yes	MD	1923	
Frederick 4568—Tillman Co	Gen	Part	12	1	2	No	MD	1922	
Frederick Clinic Hospital	Gen	Part	12	1	2	No	MD	1922	
Spurgeon Arrington & Allen Hospital and Clinic	Gen	Part	10	4	1	No	R N	1922	
Grandfield 1416—Tillman Co	Gen	Indiv	10	3	3	No	MD	1919	
Grandfield Hospital	Gen	Indiv	10	3	3	No	MD	1919	
Cuthrie 9582—Logan Co	N & M	Indiv	30	22		No	MD	1909	
Duke Sanitarium	Gen	Church	70	21	10	No	Indy	1908	
Oklahoma Methodist Episcopal Hospital	Gen	Church	70	21	10	No	Indy	1913	
Park Sanitarium (col)	Gen	Indiv	20	8	2	No	R N	1910	
Henryetta 7694—Okmulgee Co	Gen	Indiv	20	8	2	No	R N	1926	
Henryetta Hospital	Gen	Indiv	20	8	2	No	R N	1926	
Keystone Hospital	Gen	Indiv	20	8	2	No	R N	1926	
Hobart 4982—Nowata Co	Gen	Part	30	10	5	No	MD	1928	
General Hospital	Gen	Indiv	30	20	10	No	MD	1927	
Holden 1176—Nowata Co	Gen	Indiv	30	20	10	No	MD	1927	
Holden Hospital	Gen	Indiv	30	20	10	No	MD	1927	
Hollis 2911—Harmon Co	Gen	Indiv	20	7	4	No	R N	1919	
Hollis Hospital	Gen	Indiv	20	7	4	No	R N	1919	
Hominy 348—Osage Co	Gen	City	16	6		No	R N	1920	
Hominy Hospital	Gen	City	16	6		No	R N	1920	
Lawton 10121—Comanche Co	Gen	Indian	100	11	10	Yes	MD	1915	
Nowata Indian Hospital	Gen	Indian	100	11	10	Yes	MD	1915	
Southwestern Hospital	Gen	Part	30	11	4	No	MD	1919	
Mangum 4506—Greer Co	Gen	Part	50	21	6	Yes	Lay	1900	
Border McGregor Hospital and Clinic	Gen	Part	50	21	6	Yes	Lay	1900	
Maple 3084—Stephens Co	Gen	Indiv	20	12	4	Yes	Indy	1920	
Weeden Hospital	Gen	Indiv	20	12	4	Yes	Indy	1920	
Maud 4326—Pottawatomie Co	Gen	Indiv	20	12	4	Yes	R N	1928	
Maud Hospital	Gen	Indiv	20	12	4	Yes	R N	1928	
McAlester 11894—Pittsburg Co	Gen	Frnt	50	21	6	No	R N	1920	
Albert Pike Hospital	Gen	Church	18	8	2	No	R N	1914	
St Mary's Infirmary	Gen	Church	18	8	2	No	R N	1914	
Miami 864—Ottawa Co	Gen	Church	50	20	10	Yes	R N	1919	
Miami Baptist Hospital	Gen	Church	50	20	10	Yes	R N	1919	
Muskogee 32026—Muskogee Co	Gen	Indep	30	11	2	No	MD	1926	
Muskogee Provident Hospital (col)	Gen	Indep	30	11	2	No	MD	1926	
Oklahoma Baptist Hospital	Gen	Church	120	41	18	No	Indy	1909	
U S Veterans Hosp No 90	Gen	VetBur	400	761		No	MD	1921	
Norman 9603—Cleveland Co	Gen	Indiv	2000	2000		No	MD	1890	
Central Oklahoma State Hospital	N & M	State	2000	2000		No	MD	1890	
Nowata 3591—Nowata Co	Gen	Indiv	14	6	4	No	Lay	1906	
Nowata Hospital	Gen	Indiv	14	6	4	No	Lay	1906	
Ocmah 4002—Okfuskee Co	Gen	Indiv	12	6	2	No	R N	1924	
Ocmah Hospital	Gen	Indiv	12	6	2	No	R N	1924	
Oklahoma City 380—Oklahoma Co	TB	Indian	60	40		No	R N	1923	
Farm Sanitarium	TB	Indian	17	7	3	No	MD	1909	
Grant Western Hosp (col)	Gen	Part	70	28		No	R N	1924	
McBride Reconstruction Hospital	Ortho	Part	70	28		No	R N	1924	
Oklahoma City General Hospital	Gen	Indep	100	50	12	No	Lay	1914	
Polychic Hospital	Gen	Indiv	73	43	4	No	MD	1920	
Rotator Hospital	Gen	Indiv	94	28	9	No	R N	1906	
St Anthony's Hospital	Gen	Church	280	170	40	Yes	R N	1899	
State University Hospital	Gen	State	220	110	22	Yes	MD	1911	
University Hospital—Cripplid Children's Hospital	Ortho	State	200	70		Yes	MD	1928	
Wesley Hospital	Gen	Indep	100	70	9	No	Lay	1910	
Okmulgee 1707—Okmulgee Co	Gen	City	60	7	6	No	Lay	1918	
Okmulgee City Hospital	Gen	City	60	7	6	No	Lay	1918	
Pauls Valley 476—Garvin Co	Gen	Part	10	3	2	No	Lay	1928	
Lindsey Johnson Hospital	Gen	Part	10	3	2	No	Lay	1928	
Pauls Valley 510—Osage Co	Gen	City	30	10	4	No	R N	1923	
Pauls Valley Municipal Hosp	Gen	City	30	10	4	No	R N	1923	

OKLAHOMA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt. M. D.	R. N. Layman	Year Est
Pawnee 252—Pawnee Co	Gen	Indian	41	New	6	Yes	MD	1921	
Pawnee Indian Hospital	Gen	Indian	41	New	6	Yes	MD	1921	
Picher 777—Ottawa Co	Gen	Indiv	19	6	7	Yes	MD	1908	
American Hospital	Gen	Indiv	19	6	7	Yes	MD	1908	
Picher Hospital	Gen	Indiv	19	6	7	Yes	MD	1908	
Ponca City 1614—Kay Co	Gen	Indiv	18	5	2	No	Indy	1907	
Grand Avenue Gen Hosp	Gen	Indiv	18	5	2	No	Indy	1907	
Ponca City Hospital	Gen	Church	50	50	12	No	R N	1909	
Ryan 1258—Jefferson Co	Gen	Indiv	10	8	2	No	MD	1907	
Ryan Hospital	Gen	Indiv	10	8	2	No	MD	1907	
Sand Springs 6674—Tulsa Co	Gen	Indiv	40	10	1	Yes	MD	1916	
Home Hospital	Gen	Indiv	40	10	1	Yes	MD	1916	
Sapulpa 1012—Creek Co	Gen	City	18	6		No	R N	1909	
Sapulpa City Hospital	Gen	City	18	6		No	R N	1909	
Sayre 1117—Beckham Co	Gen	Indiv	20	9	2	No	R N	1928	
Island Hospital	Gen	Indiv	20	9	2	No	R N	1928	
Seminole 1140—Seminole Co	Gen	Indiv	20	10	2	No	R N	1927	
Shattuck 1490—Ellis Co	Gen	Indiv	20	10	2	No	R N	1927	
Shattuck Hospital	Gen	Indiv	20	10	2	No	R N	1927	
Shawnee 23283—Ottawatomie Co	Gen	Part	20	10	6	No	Indy	1927	
A C H Hospital	Gen	Part	20	10	6	No	Indy	1927	
Shawnee Indian Sanat	TB	Indian	100	20	12	Yes	MD	1914	
Shawnee Municipal Hosp	Gen	Indian	50	20	12	No	R N	1901	
Stillwater 7016—Payne Co	Gen	Indiv	20	10		No	MD	1911	
Stillwater Hospital	Gen	Indiv	20	10		No	MD	1911	
Sulphur 4342—Murray Co	TB	State	117	64		No	MD	1927	
Soldiers Tuberculosis Sanat	TB	State	117	64		No	MD	1927	
Sulphur Sanitarium	Gen	Part	22	2	2	No	MD	1921	
Supply 200—Woodward Co	N & M	State	1000	911		No	MD	1908	
Western Oklahoma Hosp	N & M	State	1000	911		No	MD	1908	
Tablequah 249—Cherokee Co	Gen	Indiv	10	4		No	R N	1920	
Tablequah Hospital	Gen	Indiv	10	4		No	R N	1920	
Tallman 1032—LeFlore Co	TB	Indian	60	60		Yes	MD	1916	
Choctaw Chickasaw Sanat	TB	Indian	60	60		Yes	MD	1916	
Eastern Oklahoma State Tuberculosis Sanatorium	TB	State	180	123		Yes	MD	1921	
Thomas 1066—Custer Co	Gen	Indiv	20	3	4	No	Indy	1910	
Thomas Hospital	Gen	Indiv	20	3	4	No	Indy	1910	
Tonkawa 3711—Kay Co	Gen	Part	20	6	4	No	MD	1923	
Tonkawa Hospital	Gen	Part	20	6	4	No	MD	1923	
Tulsa 1412—Tulsa Co	Gen	Indep	30	12	8	No	R N	1921	
Tulsa Lower Hospital	Gen	Indep	30	12	8	No	R N	1921	
Hospital for Bone and Joint Diseases	Ortho	Indiv	20	14		No	Indy	1920	
Hubbard Memorial Clinic	Gen	Part	10	4		Yes	Indy	1920	
Maurice Willows Hospital (col)	Gen	Indep	20	10	5	No	Indy	1922	
Morningstar Hospital	Gen	Indiv	220	108	20	No	Indy	1918	
St John's Hospital	Gen	Church	150	140	40	Yes	R N	1926	
Valita 4761—Crawf Co	N & M	State	170	1640		No	MD	1917	
Valita Hospital	N & M	State	170	1640		No	MD	1917	
Valita Hospital	N & M	State	170	1640		No	MD	1917	
Watonga 2028—Blaine Co	Gen	Indiv	10	7	3	No	R N	1923	
Watonga Hospital	Gen	Indiv	10	7	3	No	R N	1923	
Waurika 2768—Jefferson Co	Gen	Indep	35	12	4	No	R N	1920	
Waurika Hospital	Gen	Indep	35	12	4	No	R N	1920	
Wewoka 10401—Seminole Co	Gen	Indiv	18	10	4	No	R N	1920	
Knight Hospital	Gen	Indiv	18	10	4	No	R N	1920	
Wewoka Hospital	Gen	Indiv	18	10	4	No	R N	1920	
Woodward 5006—Woodward Co	Gen	Indep	40	1	4	No	R N	1916	
Woodward General Hosp	Gen	Indep	40	1	4	No	R N	1916	

Related Institutions

Chillico—Kay Co									
Chillico Indian Sch Hosp	Inst I	Indian	30	12		No	Lay	1884	
Colony 415—Washita Co									
Sugar Indian School Hosp	Gen	Indian	5	2		Yes	Indy	1880	
Ft Reno—Canadian Co									
Station Hospital	Gen	Army	12	2		Yes	MD	1884	
McAlester 11804—Iittsburg Co									
Oklahoma State Prison	Inst I	State	14	3		Yes	MD	1910	
Hospital									
Muskogee 37026—Muskogee Co									
Oklahoma School for the Blind	Inst I	State	14	3		No	Indy	1911	
Norman 9603—Cleveland Co									
Hygiene Hall	Inst I	State	40	10		Yes	MD	1920	
Okeene 103—Blaine Co									
Okeene Hospital	Gen	Indiv	9		1	No	Indy	1914	
Oklahoma City 185389—Oklahoma Co									
Holmes Home of Redemption Love									
Oklahoma Union Soldiers Home	Mater	Church	14	12	20	No	Lay	1900	
Oklahoma Union Soldiers Home	Inst I	State	20	20		No	Lay	1918	
Pryor 1814—Mayes Co									
Whitaker State Orphan Home	Inst I	State	34	8		No	Lay	1907	
Stillwater 7016—Payne Co									
Agriculture & Mechanical College Infirmary	Inst I	State	40	10		No	MD	1930	
Stroud 1694—Lincoln Co									
Glendale Hospital	Gen	Indiv	10	4		No	R N	1920	
Tahlequah 249—Cherokee Co									
Sequoyah Training School Hospital	Inst I	Indian	18	10		No	Lay	1920	
Tuloga 436—Dewey Co									
Lloyd's Hospital	Gen	Indiv	8	3		No	R N	1928	
Summary for Oklahoma									
Hospitals and sanatoriums	Number	Beds	Patients		Basinets				
Related Institutions	109	11 681	8 297		509				
	14	259	92		28				
Totals	123	11 940	8 389		537				
Refused registration	20	431			46				

PENNSYLVANIA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt M D	R N Layman	Year Est
Oakbourne—Chester Co									
Pennsylvania Epileptic Hos- pital and Colony Farm	Epil	Indep	110	102	No	M D	1896		
Oil City 2 nd 075—Venango Co									
Grandview Sanatorium	T B	Indep	50	25	No	Lay	1904		
Oil City General Hospital	Gen	Indep	120	51	22	No	Lay	1893	
Old Forge 12 661—Lackawanna Co									
Taylor Hospital	Gen	Indep	40	33	8	No	R N	1903	
Palmerton 7 648—Carbon Co									
Palmerton Hospital	Gen	Indep	65	48	8	Yes	Lay	1908	
Peckville—Lackawanna Co									
Mid Valley Hospital	Gen	Indep	64	44	8	No	R N	1908	
Pennhurst—Chester Co									
Pennhurst State School+	MenDefState		1 435	1 250	No	M D	1908		
Philadelphia 1 950 961—Philadelphia Co									
American Hosp for Dis- eases of the Stomach	Gen	Indep	89	26	Yes	R N	1900		
American Oncologic Hosp	Cancer	Indep	45	27	Yes	M D	1905		
Anderson Hospital	Gen	Indep	86	31	20	No	M D	1917	
Babies Hospital	Chil	Indep	14	9	Yes	R N	1911		
Belle Vista Sanatorium	N M	Indiv	80	50	No	M D			
Broad Street Hospital	Gen	Indep	80	39	30	Yes	R N	1896	
Chestnut Hill Hospital	Gen	Indep	92	70	20	Yes	R N	1903	
Children's Heart Hospital	Card	Indep	72	36	No	R N	1923		
Children's Hospital	Chil	Indep	117	96	Yes	R N	1955		
Edgemont Hospital	N & M	Indiv	15	15	No	M D	1922		
Fairmount Farm	N & M	Indep	44	30	No	M D	1926		
Frankford Hospital	Gen	Indep	119	101	23	Yes	R N	1903	
Frederick Douglass Me- morial Hospital (col)*	Gen	Indep	75	28	6	Yes	M D	1811	
Friends Hospital	N & M	Indep	190	167	No	M D	1813		
Garrutson Hospital	Mater	Indep	40	20	40	Yes	R N	1897	
Germantown Dispensary and Hospital	Gen	Indep	310	214	50	Yes	Lay	1870	
Graduate Hospital of the Univ of Pennsylvania	Gen	Indep	479	308	18	Yes	M D	1882	
Hahnemann Medical College Hospital	Gen	Indep	700	391	77	Yes	Lay	1848	
Home for Consumptives	T B	Church	104	98	No	M D	1869		
Hospital of the Protestant Episcopal Church	Gen	Church	4.0	326	Yes	Lay	1861		
Hospital of the University of Pennsylvania	Gen	State	533	3.4	32	Yes	R N	1874	
Hospital of the Woman's Medical College	Gen	Indep	142	70	29	Yes	M D	1904	
Institute of the Pennsyl- vania Hospital	N & M	Indep	70	20	Yes	M D	1929		
Jeunes Hospital	Cancer	Indep	72	52	Yes	R N	1927		
Jefferson Medical College Hospital	Gen	Indep	631	517	57	Yes	M D	1877	
Jewish Hospital	Gen	Indep	353	244	70	Yes	Lay	1863	
Joseph Price Mem Hosp	Gen	Indep	60	35	10	Yes	Lay	1891	
Kensington Hospital for Women	Mater	Indep	70	53	31	Yes	R N	1887	
Lankenau Hospital	Gen	Indep	268	170	30	Yes	M D	1860	
Mary J Drexel Home and Children's Hospital	Chil	Church	51	32	6	Yes	Lay	1889	
Memorial Hospital	Gen	Indep	105	81	15	Yes	Lay	1890	
Mersey Hospital (col)*	Gen	Indep	90	66	10	Yes	M D	1890	
Methodist Episcopal Hos- pital	Gen	Church	256	184	47	Yes	Lay	1892	
Metropolitan Hospital	Gen	Indep	37	15	8	Yes	R N	1919	
Metropolitan Hospital	Gen	Indep	230	159	35	Yes	Lay	1918	
Mt Sinai Hospital	Gen	Indep	281	196	53	Yes	R N	1900	
National Stomach Hospital	Gen	Indep	44	20	Yes	R N	1915		
Northeastern Hospital	Gen	Indep	80	53	10	Yes	Lay	1911	
Northern Liberties Hosp	Gen	Indep	68	46	11	Yes	R N	1922	
Northwestern General Hos- pital	Gen	Indep	56	42	8	Yes	Lay	1907	
Pennsylvania Hospital	Gen	Indep	448	350	130	Yes	Lay	1761	
Pennsylvania Hosp Dept for Mental and Nervous Diseases	N & M	Indep	325	211	Yes	M D	1751		
Philadelphia General Hos- pital	Gen	City	2 000	1 803	50	Yes	M D	1732	
Philadelphia Hospital for Contagious Diseases	Contag	City	1 050	310	No	M D	1865		
Philadelphia Hospital for Mental Diseases	N & M	Oy & Co	4 736	4 620	Yes	M D	1835		
Philadelphia Ortho Hosp & Infirmary for Nervous Diseases	Ortho Nerv	Indep	145	81	Yes	R N	1867		
Presbyterian Hospital	Gen	Church	252	182	42	Yes	Lay	1871	
Preston Retreat	Mater	Indep	50	31	30	Yes	M D	1835	
Rush Hosp for Consump- tion and Allied Diseases	T B	Indep	167	110	Yes	M D	1892		
St Agnes Hospital	Gen	Church	300	224	46	Yes	Lay	1888	
St Christopher's Hospital for Children	Chil	Indep	70	54	40	Yes	R N	1875	
St Joseph's Hospital	Gen	Church	230	170	40	Yes	R N	1840	
St Luke's and Children's Hospitals	Chil Gen	Indep	247	146	48	Yes	Lay	1877	
St Mary's Hospital	Gen	Church	210	142	42	Yes	Lay	1860	
St Vincent's Hospital for Women and Children	Gen	Church	403	320	27	Yes	R N	1855	
Shriners Hospital for Crip- pled Children	Ortho	Frat	120	120	Yes	R N	1926		
Stetson Hospital	Gen	Indep	63	37	16	Yes	R N	1885	
Temple University Hosp	Gen	Indep	323	250	50	No	M D	1903	
U S Naval Hospital	Gen	Navy	729	511	No	M D	1911		
U S Veterans Hospital	N & M	VetBur	416	396	No	M D	1920		
West Philadelphia General Homeopathic Hospital	Gen	Indep	67	50	18	Yes	R N	1904	
Wills Hospital	Eye	Indep	120	91	Yes	Lay	1852		

PENNSYLVANIA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt M D	R N Layman	Year Est
Woman's Hospital	Gen	Indep	130	112	40	Yes	M D	1861	
Women's Homeopathic Hospital	Gen	Indep	160	82	40	Yes	R N	1882	
Phillipsburg 3 600—Centre Co									
Dr McGirk Sanitarium	Gen	Indiv	20	5	6	No	R N	1901	
Phillipsburg State Hosp	Gen	State	96	66	12	Yes	R N	1890	
Phoenixville 12 029—Chester Co									
Phoenixville Hospital	Gen	Indep	58	22	9	Yes	R N	1893	
Pittsburgh 669 817—Allegheny Co									
Allegheny Gen Hosp	Gen	Indep	379	318	26	Yes	M D	1882	
Belvedere General Hospital	Gen	Indep	37	20	5	Yes	M D	1920	
Children's Hospital	Chil	Indep	196	131	Yes	Lay	1885		
Elizabeth Steel Magee Hos- pital	Gen	Indep	273	185	132	Yes	R N	1911	
Eye and Ear Hospital	EYE	Indep	55	34	5	Yes	R N	1895	
Fairview Sanatorium	N & M	Indep	12	10	No	R N	1906		
Haddon Maternity Hosp	Mater	Indep	18	12	12	No	Lay	1900	
Homeopathic Medical and Surgical Hospital and Dis- pensary	Gen	Indep	272	175	40	Yes	Lay	1866	
Leech Farm Sanatorium	T B	City	280	237	Yes	M D	1915		
Mersey Hospital	Gen	Church	622	563	48	Yes	R N	1847	
Montefiore Hospital	Gen	Indep	194	126	31	Yes	Lay	1903	
Municipal Hospital for Con- tagious Diseases	Gen	City	230	70	No	M D	1893		
Passavant Hospital	Gen	Church	182	84	24	Yes	R N	1849	
Pittsburgh Hospital	Gen	Church	176	139	24	Yes	R N	1896	
Presbyterian Hospital	Gen	Church	190	136	8	Yes	R N	1881	
Rosalia Foundling and Ma- ternity Hospital	Mater	Indep	195	121	10	No	M D	1891	
St Francis Hospital	Gen	Church	695	538	30	Yes	Lay	1845	
St John's General Hosp	Gen	Church	182	131	20	Yes	Lay	1896	
St Joseph's Hospital	Gen	Church	130	103	10	Yes	Lay	1902	
St Margaret Memorial Hospital	Gen	Church	152	77	21	Yes	R N	1910	
South Side Hospital	Gen	Indep	225	167	13	Yes	R N	1885	
Tuberculosis League Hos- pital	T B	Indep	154	140	Yes	R N	1906		
U S Marine Hospital	Gen	USPHS	90	78	Yes	M D	1910		
Western Pennsylvania Hos- pital	Gen	Indep	600	487	51	Yes	Lay	1845	
Pittston 18 746—Luzerne Co									
Pittston Hospital	Gen	Indep	112	65	18	No	R N	1892	
Polk 3 337—Venango Co									
Polk State School	MenDefState		2 580	2 441	Yes	M D	1895		
Pottstown 19 430—Montgomery Co									
Homeopathic Hospital	Gen	Indep	52	17	10	Yes	R N	1914	
Pottstown Hospital	Gen	Indep	75	40	8	Yes	R N	1889	
Pottsville 24 300—Schuylkill Co									
Lemos B Warne Hospital	Gen	Indiv	87	43	12	Yes	R N	1927	
A C Milliken Hospital	Gen	Indep	58	17	10	Yes	Lay	1921	
Pottsville Hospital	Gen	Indep	198	80	12	Yes	Lay	1895	
Punkatunney 9 966—Jefferson Co									
Adrian Hospital	Gen	Indep	75	42	6	No	M D	1895	
Punkatunney Hospital	Gen	Indep	47	27	8	No	Lay	1903	
Quakertown 4 883—Bucks Co									
Quakertown Hospital	Gen	Indep	46	25	12	No	Lay	1930	
Reading 111 171—Berks Co									
Berks Co Tuberc Sanat	T B	County	75	70	No	M D	1905		
Homeopathic Medical and Surgical Hospital	Gen	Indep	115	72	1	Yes	R N	1891	
Reading Hospital	Gen	Indep	255	164	50	Yes	Lay	1875	
St Joseph's Hospital	Gen	Church	180	136	25	Yes	Lay	1873	
Dr Stricker's Private Hosp	Gen	Indiv	24	8	4	No	M D	1905	
Renovo 3 947—Clinton Co									
Renovo Hospital	Gen	Indep	29	11	6	No	R N	1909	
Retreat—Luzerne Co									
Retreat Mental Hospital	N & M	County	625	751	No	M D	1900		
Ridgway 6 513—Elk Co									
Fly Creek General Hosp	Gen	Indep	75	50	6	No	R N	1901	
Ridley Park 3 6—Delaware Co									
Taylor Hospital	Gen	Indep	109	60	15	Yes	R N	1910	
Roaring Spring 2 724—Blair Co									
Nason Hospital	Gen	Indep	50	73	6	No	M D	1896	
Rochester 7 720—Peaver Co									
Passavant Mem Homes for the Care of Epileptics	Epil	Church	150	150	No	Lay	1875		
Rochester General Hosp	Gen	Indep	102	85	6	Yes	Lay	1875	
St Marys 7 453—Elk Co									
Andrew Kaul Mem Ho p	Gen	Indep	44	18	6	No	R N	1915	
Sayre 7 902—Bradford Co									
Peoples Cooperative Hos	Gen	Indep	47	29	6	Yes	R N	1910	
Robert Packer Hos pital	Gen	Indep	200	150	15	Yes	Lay	1855	
Schuylkill Haven 6 514—Schuylkill Co									
Schuylkill County Hos pital for Mental Diseases	N & M	County	42	41	Yes	M D	1911		
Seranton 143 453—Lackawanna Co									
Hahnemann Hospital	Gen	Indep	109	65	16	Yes	Lay	1877	
Lackawanna County Tu- berculosis Hos pital	T B	County	150	150	No	R N	1901		
Mersey Hospital	Gen	Church	100	65	20	Yes	R N	1917	
Moses Taylor Hospital	Gen	Indep	100	65	20	Yes	R N	1917	
St Joseph's Children's and Maternity Hospital	Mater	Church	150	150	40	No	Lay	1910	
St Mary's Keller Memorial Hospital	Gen	Church	75	75	6	No	R N	1911	
Seranton Private Hos pital	Gen	Indep	4	15	6	No	M D	1911	
Seranton State Hos pital	Gen	State	150	150	14	Yes	Lay	1911	
West Side Hos pital	Gen	Indep	65	65	10	Yes	Lay	1911	
Selinsgrove 2 737— Snyder Co									
Selinsgrove State Colony for Epileptic	Epil	State	57	150	No	M D	1911		
Seller's 2 667—Lack Co									
Grand View Hos pital	Gen	Indep	75	50	5	No	Lay	1911	

PENNSYLVANIA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinsets	Outpatient Dept	Suppl. M.D. Layman	Year Est
Shamokin 20 274—Northumberland Co								
Dr J. H. Focht's Maternity Hospital	Mater	Indiv	10	4	10	No	M D	1926
Shamokin State Hospital	Gen	State	92	70	8	Yes	M D	1912
Sharon 2 908—Mercer Co								
Christian H. Buhl Hosp	Gen	Indep	108	61	17	Yes	Indy	1893
Sharpsburg 8 642—Allegheny Co								
U. S. Veterans Hosp No 103	TB	Vet Bur	226	200		No	M D	
Shenandoah 21 480—Schuylkill Co								
Locust Mountain State Hos	Gen	State	60	40	4	Yes	Indy	1926
Somer ct 4 39—Somerset Co								
Somerset Community Hos	Gen	Indep	20	10	6	Yes	R N	1921
South Mountain—Franklin Co								
Pennsylvania State Sanat	TB	State	900	800		No	M D	1907
Spanker 2 761—Cambria Co								
Miners Hospital of North ern Cambria	Gen	Indep	70		6	No	R N	1910
Sunbury 15 626—Northumberland Co								
Mary M. Packer Hospital	Gen	Indep	67		8	Yes	M D	1897
Susquehanna 3 203—Susquehanna Co								
Simon H. Barnes Memorial Hospital	Gen	Indep	18	9	5	No	R N	1904
Tarentum 9 501—Allegheny Co								
Allegheny Valley Hospital	Gen	Indep	91	60	10	No	R N	1906
Titusville 8 007—Crawford Co								
Titusville Hospital	Gen	Indep	30	10	6	No	R N	1901
Torrance 414—Westmoreland Co								
Torrance State Hospital	N & M	State	900	634		No	M D	1910
Uniontown 19 044—Fayette Co								
Uniontown Hospital	Gen	Indep	200	100	20	Yes	Indy	1902
Upland 2 500—Delaware Co								
Bram Goiter Institute	Goiter	Indiv	20	10		No	M D	1920
Warren 14 863—Warren Co								
Warren General Hospital	Gen	Indep	80	40	20	No	R N	1898
Warren State Hospital	N & M	State	177	160		Yes	M D	1880
Washington 24 545—Washington Co								
Hillsview Sanitarium	Gen	Indiv	12			No	M D	1893
Washington Hospital	Gen	Indep	122	110	25	Yes	Indy	1894
Waynesboro 10 167—Franklin Co								
Waynesboro Hospital	Gen	Indep	30	27	10	No	R N	1922
Waynesburg 4 916—Greene Co								
Greene County Men Hosp	Gen	Indep	30	10	6	No	R N	1907
Wernersville 1 036—Berks Co								
Wernersville State Hosp	N & M	State	110	100		No	M D	1894
West Chester 12 325—Chester Co								
Chester County Hospital	Gen	Indep	116	70	22	Yes	M D	1893
Homeopathic Hospital	Gen	Indep	60		9	Yes	R N	1913
Vell Maternity Hospital	Mater	Indiv	110	60	50	No	Indy	1900
West Grove 1 375—Chester Co								
West Grove Hospital	Gen	Indiv	23	11	8	No	Indy	1918
White Haven 1 537—Luzerne Co								
White Haven Sanatorium	I B	Indep	200	240		No	R N	1890
Wilkes Barre 86 606—Luzerne Co								
Mercy Hospital	Gen	Church	202	190	20	Yes	Indy	1898
Wilkes Barre Gen Hosp	Gen	Indep	415	225	37	Yes	Indy	1872
Wyoming Valley Homeopathic Hospital	Gen	Indep	70	52	10	Yes	R N	1911
Wilkesburg 29 539—Allegheny Co								
Columbia Hospital	Gen	Church	178	100	26	Yes	R N	1880
Williamsport 40 729—Lycoming Co								
Rothfuss Clinic and Hosp	Gen	Part	20	12	6	Yes	M D	1928
Williamsport Hospital	Gen	Indep	231	100	44	Yes	Indy	1873
Williamstown 2 908—Dauphin Co								
Williams Valley Hospital	Gen	Indiv	24		2	Yes	M D	1918
Windber 9 900—Somerset Co								
Windber Hospital	Gen	Indep	97	70	5	Yes	M D	1906
Woodville 510—Allegheny Co								
Allegheny County Home and Hosp for the Insane	N & M	County	2 778	2 484		No	M D	1800
York 50 204—York Co								
West Side Sanitarium	Gen	Indiv	50	21	9	No	M D	1914
York Hospital	Gen	Indep	200	110	30	Yes	R N	1880
Related Institutions								
Bellevue 10 202—Allegheny Co								
Salvation Army Woman's Home and Hospital	Mater	Church	8	8	30	No	Indy	1900
Broomall 125—Delaware Co								
Convalescent Hospital	Conv	Frat	30	25		No	R N	1910
Bryn Mawr 3 006—Montgomery Co								
Bryn Mawr College Infirm	Inst l	Indep	10	4		Yes	M D	1893
Cambridge Springs 1 660—Crawford Co								
Logan's Hospital	Gen	Indiv	10	5		No	R N	1900
Carlisle 12 590—Cumberland Co								
Cumberland County Home	Inst l	County	24	20		No	Indy	
Chambersburg 13 788—Franklin Co								
Wilson College for Women Infirm	Inst l	Indep	10	2		No	R N	1800
Darby 9 899—Delaware Co								
St. Francis Country House for Conv & St. Francis Hall for Incurables	Conv Incur	Church	00	42		No	Indy	1913
Devon 364—Chester Co								
Eliza Cathcart Home	Incur	Church	43	38		No	Indy	1890
Flensburg 2 003—Cambria Co								
Cambria Co Almshouse & House of Employment	Inst l	County	48	48		No	Indy	1852
Linsworth 2 000—Allegheny Co								
Orphan Asylum of the Holy Family	Inst l	Church	20	5		No	Indy	1900
Eric 110 967—Frie Co								
Lakeview Hospital	Iso	City	74	12		No	Lay	1903
Louise Home	TB	Indep	10	13		No	R N	1913

PENNSYLVANIA—Continued

Related Institutions	Type of Service	Control	Beds	Average Patients	Basinsets	Outpatient Dept.	Suppl. M.D. Layman	Year Est.
Pennsylvania Soldiers and Sailors Home Hospital	Inst l	State	65	50		No	R N	1850
St. Joseph's Home for Children	Inst l	Church	42	12		No	Lay	1884
Glenside 1811—Allegheny Co								
St. Barnabas Free Home	Incur	Church	107	100		No	Lay	1910
Glenside 1811—Montgomery Co								
Bramlett Kerr Sanatorium	Gen	Indiv	8	2	2	No	R N	1904
Harmarville 786—Allegheny Co								
Harmarville Conv Home	Conv	Indep	60	40	20	No	R N	1913
Huntingdon 755—Huntingdon Co								
Pennsylvania Industrial Reformatory	Inst l	State	26	10		No	Lay	1830
Johnstown 60997—Cambria Co								
Barbara Salus Memorial Hospital	Alcoh Iso	Indiv City	12			No	M D	1915
Municipal Hospital	Iso	City	60	10		No	M D	1902
Lansdowne 9512—Delaware Co								
Sanatorium School	Ortho	Indiv	30	20		No	R N	1914
Joyville 400—Lehigh Co								
Jessier Orphans Home	Inst l	Church	30	1		No	Lay	1863
Media 0372—Delaware Co								
Dermody Cottage Sanat	TB	Indiv	25	20		No	Lay	1903
Middletown 608—Dauphin Co								
Odd Fellows Home	Inst l	Frat	50	47		No	Lay	1874
Morgantown—Washington Co								
Pennsylvania Training School	Inst l	State	11	10		No	Lay	1854
Nazareth 000—Northampton Co								
Northampton County Almshouse	Inst l	County	05	00	8	No	Lay	1833
New Brighton 0000—Beaver Co								
Beaver County Children's Home	Inst l	Indep	10			No	Lay	1909
Newton Square 168—Delaware Co								
Dunwoody Home	Conv	Indep	40	40		No	R N	1904
New Wilmington 907—Lawrence Co								
Overlook Sanitarium	Conv	Indep	34	00		No	M D	1911
North East 3070—Frie Co								
St. Barnabas House by the Lake	Incur	Church	25	20		No	Lay	1923
Oakbourne—Chester Co								
James C. Smith Memorial Home	Conv	Church	18	16		No	M D	1890
Olyphant 10743—Lackawanna Co								
Blackely Home	Inst l	Indep	155	126		No	Lay	1911
Philadelphia 1900961—Philadelphia Co								
Belmont Hospital	Mater	Church	25	14	12	No	Lay	1893
Brown's Farm	Chil City	70	60		No	Lay	1916	
Chester Ave Private Hosp	Gen	Indiv	9	1	9	No	M D	1924
Eastern State Penit Hosp	Inst l	State	61	29		Yes	M D	1822
Floranco Crittenton Home	Mater	Indep	16	17	16	No	Lay	1893
Hebrew Sheltering Home	Inst l	Indep	00	00	40	No	Lay	1903
Home for the Indigent	Inst l	City	40	00		No	Lay	1913
Home of the Merciful Savior for Crippled Children	Ortho	Church	62	62		No	R N	1882
House of Correction	Inst l	City	40	20		No	Lay	1874
House of the Good Shepherd	Vener	Church	70	40		No	Lay	1892
Indigent Widows and Single Women's Society	Inst l	Indep	22	22		No	Lay	1817
Kenwood Sanitarium	Conv	Indiv	20	20		No	Lay	1903
Logan Private Hospital	Conv	Indiv	7			No	Lay	1906
Lucien Moss Home	Incur	Indep	64	60		Yes	Lay	1900
Lutheran Orphanage and Home for Aged	Inst l	Church	33	20		No	Lay	1850
Pennsylvania Institution for the Deaf	Inst l	Indep	20	5		No	Lay	1870
Philadelphia County Prison	Inst l	County	85	27		No	Lay	1890
Philadelphia Home for Incurables	Incur	Indep	203	180		No	R N	1877
Roanoke Farms	Conv	Indep	23	21		No	M D	1904
Widener Memorial Industrial Training School for Crippled Children	Ortho	Indep	100	50		No	M D	1906
Pittsburgh 669817—Allegheny Co								
J. M. Gusky Orphanage and Home	Inst l	Indep	20	2		No	Lay	1891
Industrial Home for Crippled Children	Inst l	Indep	28	18		No	Lay	1902
Jewish Home for the Aged	Inst l	Indep	20	20		No	Lay	1906
Western Penitentiary Hos	Inst l	State	27	16		No	Lay	1826
Pottsdawn 19430—Montgomery Co								
Hill School Infirm	Inst l	Indep	30	9		No	M D	1852
Punxsutawney 9066—Jefferson Co								
Murray Sanitarium	Gastro Intes	Indiv	15	8		No	M D	1911
Retreat—Luzerne Co								
Retreat Home and Hospital for Chronic Diseases	Inst l	County	124	120		No	M D	1840
Schuylkill Haven 0514—Schuylkill Co								
Schuylkill County Hospital	Inst l	County	120	118		No	R N	1899
Seranton 143433—Lackawanna Co								
Dr. Evans Hospital	Gen	Indiv	12	6	3	No	M D	1908
Municipal Hospital for Convalescent Diseases	Iso	City	50	5		No	R N	1915
Woman's Hospital	Mater	Part	18	6	8	No	M D	1922
Shillington 4401—Berks Co								
Berks Co Almshouse Hosp	Inst l	County	100	90		No	Lay	1824
Somerset 4350—Somerset Co								
Somerset Co Home & Hos	Inst l	County	600	500		No	M D	1900
State College 4400—Centre Co								
Pennsylvania State College Health Service Infirm	Inst l	State	20	12		Yes	R N	1915
Lroy 1190—Bradford Co								
Bradford County Home	Inst l	County	110	100		No	Lay	1880

Key to symbols and abbreviations is on page 1023

PENNSYLVANIA—Continued									
Related Institutions	Type of Service	Control	Beds	Average Patients	Bassnets	Outpatient Dept	Supt M D	R N Layman	Year Est
Tyrone 9042—Blair Co Methodist Home for the Aged	Inst 1	Church	10	10	No	I	ay	1919	
Union City 3788—Frie Co Union Hospital	Gen	Indiv	13	5	5	No	R N	1921	
Valencia 3083—Butler Co Lillian Convalescent Rest	Conv	Indep	51	46	No	R N		1911	
Washington 2454—Washington Co Washington County Home	Inst 1	County	50	46	No	M D			
Weatherly 2531—Carbon Co Middle Coal Field Poor District Almshouse	Inst 1	County	30	21	No	Lay		1884	
White Haven 1537—Iuzerne Co Clair Mont Sanatorium	T B	Indiv	14	10	No	R N		1910	
Ferncliff Sanatorium	T B	Part	21	18	No	I	ay	1844	
Sunnyrest Sanatorium	T B	Part	50	40	No	Lay		1901	
Wilkes Barre 86696—Luzerne Co Emergency Contagious Disease Hospital	Iso	City	12	4	No	M D		1915	
Willow Grove 0665—Montgomery Co Willow Crest for Conv	Conv	Indep	71	74	4	No	I	ay	1910
Wycoate 2755—Montgomery Co Crest View Sanatorium	N & M	Indiv	12	8	No	I	ay	1911	
Youngsville 1906—Warren Co Rouse Hospital	Inst 1	County	100	80	No	Lay		1860	
Summary for Pennsylvania									
Hospitals and sanatoriums	311		71848	19360	4071				
Related Institutions	78		426	1295	164				
Totals	389		76114	6164	4235				
Refused registration	23		500		79				

RHODE ISLAND									
Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Bassnets	Outpatient Dept	Supt M D	R N Layman	Year Est
Central Falls 2588—Providence Co Notre Dame Hospital	Gen	Indep	44	21	6	Yes	R N		1923
East Greenwich 3606—Kent Co Crawford Allen Memorial Hosp	(Included in Rhode Island Hospital)								
Hillsgrove 1870—Kent Co St Joseph's Sanit Annex	T B	Indep	80	63	No	R N		1904	
Howard 220—Providence Co State Hospital for Mental Disease	N & M	State	2000	1923	No	M D		1869	
State Infirmary	Gen	State	924	82	12	No	M D	1872	
La Fayette 700—Washington Co Exeter School	MenDefState		542	514	No	M D		1907	
Newport 27012—Newport Co Newport Hospital	Gen	Indep	164	78	21	Yes	Lay	1843	
Station Hospital	Gen	Army	25	12	Yes	M D		1862	
U S Naval Hospital	Gen	Navy	211	218	Yes	M D		1913	
Pawtucket 77149—Providence Co Memorial Hospital	Gen	Indep	110	98	Yes	Lay		1910	
Providence 22081—Providence Co Broadway Hospital	N & M	Gen	12	6	No	M D		1906	
Butler Hospital	N & M	Indep	160	144	Yes	M D		1844	
Homeopathic Hospital	Gen	Indep	166	116	33	Yes	Lay	1904	
Hope Ho pital	Gen	Indep	35	28	No	Lay		1913	
Jane Brown Mem Hosp	Gen	Indep	66	38	28	No	M D	1922	
John W Keefe Surgery	Gen	Indep	25	4	Yes	M D		1915	
Miriam Hospital	Gen	Indep	61	35	16	Yes	Lay	1921	
Providence City Hosp +0	Iso TB City		250	123	Yes	M D		1910	
Providence Lying In Hospital	Mater	Indep	156	96	156	Yes	M D	1884	
Rhode Island Hospital +0	Gen	Indep	534	384	Yes	M D		1863	
St Joseph's Hospital +0	Gen	Church	300	165	40	Yes	R N	1892	
Wakfield 2716—Washington Co South County Hospital	Gen	Indep	35	19	10	No	R N	1919	
Wallum Lake 75—Providence Co R I State Sanatorium +	T B	State	405	360	Yes	M D		1905	
Westerly 1097—Washington Co Margaret F Ward Anderson Hospital	Gen	Indiv	25	25	8	Yes	R N		1925
Westerly Hospital +0	Gen	Indep	61	25	12	No	R N		1925
Woonsocket 49376—Providence Co Woonsocket Hospital	Gen	Indep	125	72	20	Yes	Lay	1873	
Related Institutions									
Bristol 11933—Bristol Co R I Soldiers Home	Inst 1	State	50	37	No	Lay		1889	
Howard 220—Providence Co Rhode Island State Prison	Inst 1	State	20	10	Yes	Lay		1878	
Rocknosses Sch for Boys	Inst 1	State	8	4	No	Lay		1882	
Hovse 78—Kent Co Lakeside Home & Prevent	T B	Indep	140	63	No	R N		1910	
Providence 22081—Providence Co Heath Sanatorium	Conv	Indiv	20	16	No	Lay		1911	
Heath Sanatorium Annex	Conv	Indiv	17	13	No	Lay		1922	
St Elizabeth Home	Incur	Church	44	43	No	R N		1883	
Summary for Rhode Island									
Hospitals and sanatoriums	25		6547	545	54				
Related Institutions	7		297	176	—				
Totals	32		6844	5620	54				
Refused registration	2		77		3				

SOUTH CAROLINA									
Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Bassnets	Outpatient Dept	Supt M D	R N Layman	Year Est
Abbeville 4414—Abbeville Co Abbeville Co Mem Hosp +0	Gen	Indep	25	6	2	No	R N		1920
Alken 203—Aiken Co Aiken County Hospital	Gen	County	32	18	2	No	M D		1927
Anderson 14383—Anderson Co Anderson County Hospital +0	Gen	Indep	74	50	10	No	M D		1908
Bennettsville 1667—Marlboro Co Marlboro Co Cen Hosp	Gen	County	38	15	7	No	R N		1929
Camden 5112—Kershaw Co Camden Hospital +0	Gen	Indep	45	32	6	Yes	R N		1910
Charleston 67265—Charleston Co Baker Sanatorium +0	Gen	Indiv	50	45	12	No	R N		1912
Roper Hospital +0	Gen	Indep	269	225	31	Yes	Lay		1850
St Francis Xavier Infirm +0	Gen	Church	50	23	12	No	R N		1882
Chester 2—Chester Co Pryor Hospital	Gen	Indep	64	22	6	No	M D		1896
Clinton 14—Laurens Co Dr Hays Hospital	Gen	Indiv	18	7	2	No	R N		1916
Columbia 51581—Richland Co Columbia Hospital +0	Gen	County	125	75	9	Yes	Lay		1892
Good Samaritan Hospital (col) +0	Gen	Indep	65	45	5	Yes	M D		1910
South Carolina Baptist Hospital +0	Gen	Church	109	97	6	Yes	Lay		1914
South Carolina State Hos +0	N & M	State	319	312	3	Yes	M D		1872
Waverly Hospital (col) +0	Gen	Frnt	58	30	4	No	M D		1924
Waverly Sanitarium	N & M	Indep	36	26	No	Lay		1914	
Conway 3011—Horry Co Conway Hospital	Gen	Indep	35	16	6	No	R N		1906
Florence 14774—Florence Co McLeod Infirmary +0	Gen	Indep	175	90	6	No	M D		1906
Saunders Memorial Hosp +0	Gen	Indep	60	48	8	Yes	M D		1921
Gaffney 1827—Cherokee Co City Hospital +0	Gen	Indep	35	11	No	R N		1909	
Greenville 29134—Greenville Co Emma Moss Booth Memorial Ho pital +0	Gen	Church	60	40	8	Yes	Lay		1921
Greenville City Hospital +0	Gen	City	115	74	10	Yes	R N		1912
Greenville Co Tuber Hosp	T B	County	80	New	Yes	M D		1910	
Dr Jervess Private Hosp	EEN1	Indiv	15	5	No	R N		1918	
Shriners Hospital for Crip pled Children	Ortho Surg	Frnt	601	61	Yes	R N		1921	
Dr Tyler's Hospital	Indiv	Indiv	12	4	No	Lay		1913	
Work ing Benevolent Society Ho pital (col) +0	Gen	Part	20	8	1	No	R N		1927
Greenwood 11070—Greenwood Co Brewer Hospital (col) +0	Gen	Church	17	5	1	No	Lay		1924
Greenwood City Ho pital +0	Gen	Indep	10	13	4	No	R N		1911
Kingstree 2399—William burg Co Kelley Sanatorium +0	Gen	Indiv	25	19	5	No	R N		1919
Lake City 1942—Florence Co Lynch Infirmary	Gen	Indiv	20	8	No	M D		192	
Lancaster 2545—Lancaster Co Lancaster Hospital	Gen	Indiv	25	8	2	No	R N		1930
Laurens 443—Laurens Co Laurens Hospital	Gen	Indep	18	4	2	No	R N		1914
Jessville 1340—Lexington Co Leesville Infirmary +0	Gen	Indep	26	7	No	Lay		1915	
Moultrieville 515—Charleston Co Station Hospital	Gen	Army	41	12	Yes	M D		1900	
Mullins 3138—Marion Co Marion County Tuberculo sis Sanatorium (col) +0	T B	County	175	1	No	M D		1909	
Mullins Hospital +0	Gen	Indep	75	70	9	No	Lay		1911
Navy Yard 109—Charleston Co Pinchaven Sanatorium	T B	County	50	45	No	Lay		1911	
Newberry 7298—Newberry Co Newberry County Hosp +0	Gen	Indep	25	7	No	M D		190	
Orangeburg 876—Orangeburg Co Orangeburg Hospital +0	Gen	Indiv	2	7	No	R N		1911	
Parris Island 30—Beaufort Co U S Naval Hospital	Gen	Navy	101	80	Yes	M D		1850	
Ridgewood (Columbia P O) —Richland Co Ridgewood Tuber Camp	T B	Indep	61	40	Yes	R N		1911	
Rock Hill 11392—York Co Fennell Infirmary +0	Gen	Indiv	50	11	2	Yes	R N		1909
Lyle Hospital +0	Gen	Indiv	20	12	3	Yes	R N		1911
Six Mile 140—Pickens Co Dr Peck's Hospital	Gen	Indiv	20	12	2	Yes	M D		191
Spartanburg 25723—Spartanburg Co Mary Black Clinic and Pri vate Hospital +0	Gen	Part	50	70	No	M D		1914	
Provident Ho pital (col) +0	Gen	Indiv	50	70	No	Lay		1910	
Spartanburg County Hos pital for Colorid	Gen	County	5	14	No	Lay		1910	
Spartanburg General Hos pital +0	Gen	County	11	9	16	Yes	M D		1911
State Park —Richland Co Palmetto Sanatorium (Colorid Division of South Carolina Sanatorium)	State	State	74	20	No	M D		1911	
Sumter 11750—Sumter Co Camp Alice	T B	City	5	5	Yes	R N		1911	
Thouney Ho pital +0	Gen	Indiv	5	5	Yes	R N		1911	
Taylor 201—Greenville Co Chick Spring Hotel Sanit +0	Gen	Indiv	5	5	No	M D		1911	
Union 2412—Union Co Wallace Thomp on Ho p	Gen	Indep	5	11	No	R N		1911	
Walterboro 25—Colleton Co Charles Dorn Ho pital +0	Gen	Indiv	4	4	No	R N		1914	
Woodruff 31—Spartanburg Co Workman Memorial Ho p	Gen	Indiv	10	4	No	R N		1911	

SOUTH DAKOTA—Continued

SOUTH DAKOTA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept.	M.D.	R.N.	Yr. est.
New Underwood 311—Pennington Co Hospital	Gen	Indep	13	New	6	No	MD	1909	
New Underwood Community Hospital	Gen	Indiv	12	5		No	Lay	1911	
Parkston 1206—Hutchinson Co Dr J I Waldner & Hosp	Gen	Church	75	42	10	No	R \	1909	
Pierre 309—Hughes Co St Mary's Hospital	Gen	Church	60	40	6	Yes	R \	1913	
Rapid City 10401—Pennington Co Methodist Deaconess Hosp	Gen	Church	75	35	12	Yes	R \	1914	
St John's Hospital	Gen	City	17	5	5	No	R \	1911	
Redfield 2661—Spink Co Baldwin Community Hosp	Gen	MenDefState	600	525	25	No	MD	1901	
State School and Home for Feeble-minded	Gen	Indian	20	4	6	Yes	Lay	1915	
Rosebud 120—Todd Co Reubnd Agency Hospital	Gen	Indian	20	4	6	Yes	Lay	1915	
Sanctorio 10—Custer Co South Dakota State Sanatorium for Tuberculosis	TB	State	210	170		No	MD	1911	
Slay 1325—Minnehaha Co McKennan Hospital	Co	Church	110	75	12	No	Lay	1913	
Moie Hospital and Clinic	Co	Indiv	75	11	8	No	R \	1911	
Sloux Valley Hospital	Gen	Indep	156	65	20	No	Lay	1914	
Vermillion 2830—Clay Co Vermillion Hospital	Gen	Indiv	10	4	2	No	R \	1915	
Volk 401—Brookings Co Volk Hospital	Co	Indep	16	6	5	No	Lay	1910	
Watertown 1014—Codington Co Barron Hospital	Co	Indep	60	34	6	Yes	R \	1909	
Webster 180—Day Co Luther Hospital	Co	Church	60	41	8	No	Lay	1915	
Peabody Hospital	Co	Indiv	75	40	9	No	Lay	1914	
Winner 206—Lipp Co Winner Central Hospital	Co	Indiv	10	6	2	No	MD	1914	
Yankton 602—Yankton Co Sacred Heart Hospital	Co	Part	12	6	4	No	R \	1913	
Yankton State Hospital	Gen	N&M	130	77	20	No	Lay	1910	
			1504	1452		No	MD	1910	

Related institutions

Related Institutions		Gen	Indiv	S	3	2	No	MD	1919
Axon 670—Bon Homme Co		Gen	Indiv	8	3	2	No	MD	1919
Hollingsworth Hospital									
Camp Crook 161—Harding Co		Gen	Indiv	12	2	2	No	MD	1918
Camp Crook Hospital									
Flandreau 1934—Woody Co									
Flandreau Indian School		Inst 1	Indian	27	11		No	MD	1903
Hospital									
Hot Springs 2908—Fall River Co		Inst 1	Indiv	560	510		No	MD	1907
Battle Mountain Sanit		Inst 1	State	30	15		Yes	RN	1889
State Soldiers Home									
On'da 636—Sully Co		Gen	Indiv	8	2	3	No	Lay	1917
Onida Hospital									
Pierre 369—Hughes Co									
Pierre Indian School Hosp		Inst 1	Indian	30	11		Yes	Lay	1891
Pine Ridge 618—Shannon Co									
Oglala Boarding School		Inst 1	Indian	24	13		No	Lay	1914
Hospital									
Platte 1907—Charles Mix Co		Gen	Indiv	6	2	2	Yes	MD	1909
Platte Hospital									
Tyndall 1287—Bon Homme Co		Gen	Indiv	6	3		No	MD	1923
Tyndall Hospital									
Wagner 1420—Charles Mix Co		Gen	Indiv	8	3	2	No	MD	1919
Trink Hospital		Gen	Indiv	8	3	2	No	MD	1917
Pinnard Hospital									
Summary for South Dakota				Beds	Patients		Bacsinets		
				Number					
Hospitals and sanatoriums				52	4 649		342		
Related Institutions				12	618		13		
				64	5 297		355		
				7	118		14		
Totals									
Refused registration									

TENNESSEE

TENNESSEE									
Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinsets	Outpatient Dept	Supt	R N	Year Est
Athens 5385-McMinn Co	Gen	Part	10	6	3	No	MD	190	
Foreo Hospital						No	MD	1883	
Bearders 218-Knox Co	N & M	State	1300	100		No	MD	1889	
Eastern State Hospital	N & M	State	1150	1100		No	MD	1921	
Bolivar 1217-Hardeman Co						No	MD	1921	
Western State Hospital+		Indiv	12	6		No	MD	1921	
Western State Hospital+	Gen					No	MD	1921	
Edwards 943-Hickman Co	Gen					No	MD	1921	
Edwards Hospital	Gen					No	MD	1921	
Chattanooga 119785-Hamilton Co	Cy & Co		197	156	21	Yes	R N	1888	
Chattanooga 119785-Hamilton Co	Gen	Indiv	60	20	10	No	R N	1903	
Baroness Erlanger Hosp	Cy & Co	Indiv	75	34	10	No	R N	1909	
Chattanooga Hospital	Chil	Part	67	4	4	Yes	MD	1908	
Chattanooga Hospital	Chil	Indiv	210	204	4	Yes	MD	1915	
Children's Hospital	TB	Indiv	2	2	2	No	MD	1915	
Newell and Newell Sanit	Gen					No	MD	1915	
Pine Breeze Sanitarium+	Gen					No	MD	1915	
Pine Breeze Hospital (col)	Gen					No	MD	1915	
Walden Hospital (col)	Gen					No	MD	1915	
Clarksville 9242-Montgomery Co	Gen	Indiv	2	17	10	No	R N	1917	
Clarksville Home Infirmary	Gen	Indep	10			No	R N	1917	
Clarksville Hospital	Gen					No	MD	1917	
Cleveland 9136-Bradley Co	Gen	Indep	32	14	10	No	MD	1917	
Speck Hospital						No	MD	1917	

Key to symbols and abbreviations is on page 1023

TENNESSEE—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinsets	Outpatient Dept	Supt M D	R N	Layman	Year Est
Columbia 788—Maury Co	Gen	Indep	50	20	4	Yes	R N			1912
Kings Daughters Hospital	Gen	City	15	12		No	M D			1921
Cookeville 373—Putnam Co	Gen	City	10	6	2	No	Lay			1927
Cookeville City Hospital	Gen	Indep	20	7	2	Yes	R N			1919
Dayton 200—Rhea Co	Gen	Indiv	10	6	2	No	Lay			1927
Broyles Private Hospital	Gen	Indep	20	7	2	Yes	R N			1919
Cedar Hill Hospital	Gen	Indep	20	7	2	Yes	R N			1919
Donelson 110—Davidson Co	Gen	Indep	20	7	2	Yes	R N			1919
Fennell Home and Training School	FeMI	State	500	500		Yes	M D			1913
Dyersburg 8733—Dyer Co	Gen	Indep	50	15		No	M D			1914
Baird Brewer Gen Hosp	Gen	Indep	50	15		No	M D			1914
Elizabethton 807—Carter Co	Gen	Indep	20	8	2	No	R N			1928
St Elizabeth Gen Hosp	Gen	Indep	20	8	2	No	R N			1928
Etowah 400—McMinn Co	Gen	Indep	20	8	2	No	R N			1928
Etowah Hospital	Gen	Indep	20	8	2	No	R N			1928
Greeneville 544—Greene Co	Gen	Indep	20	8	2	No	R N			1928
Greeneville Sanat & Hosp	Gen	Indep	20	8	2	No	R N			1928
Takoma Hosp and Sanit	Gen	Indep	20	8	2	No	R N			1928
Jackson 22172—Madison Co	Gen	Indep	20	8	2	No	R N			1928
Crook Sanatorium	Gen	Indep	20	8	2	No	R N			1928
Memorial Hospital	Gen	Indep	20	8	2	No	R N			1928
Webb Williamson Hospital	Gen	Indep	20	8	2	No	R N			1928
Johnson City 2080—Washington Co	Gen	Indep	20	8	2	No	R N			1928
Appalachian Hospital	Gen	Indep	20	8	2	No	R N			1928
Campbell's Eye Ear Nose and Throat Hospital	FEENT	Indiv	20	8	2	No	R N			1928
Elizabeth Goss Mem Hosp	Gen	Indiv	20	8	2	No	R N			1928
Jones Eye Ear Nose and Throat Hospital	LENT	Indiv	20	8	2	No	R N			1928
Kingsport 11914—Sullivan Co	Gen	Part	20	8	2	No	R N			1928
Kingsport General Hosp	Gen	Part	20	8	2	No	R N			1928
Marsh Clinic and Hospital	Gen	Indiv	20	8	2	No	R N			1928
Knoxville 10,802—Knox Co	Gen	Indep	20	8	2	No	R N			1928
Beverly Hills Sanatorium	TB	Indep	20	8	2	No	R N			1928
Dr H F Christenberry Eye Ear Nose and Throat Infirmary	FEENT	Indiv	20	8	2	No	R N			1928
Knoxville Gen Hosp	Gen	City	20	8	2	No	R N			1928
Riverside-Ft Sanders Hospital	Gen	Indep	20	8	2	No	R N			1928
St Mary's Hospital	Gen	Church	20	8	2	No	R N			1928
Lawrenceburg 3102—Lawrence Co	Gen	Indep	20	8	2	No	R N			1928
Lawrenceburg Rural Sanatorium and Hospital	Gen	Indep	20	8	2	No	R N			1928
Lebanon 446—Wilson Co	Gen	Indiv	20	8	2	No	R N			1928
Libards Infirmary	Gen	Indiv	20	8	2	No	R N			1928
McFarland Hospital	Gen	Indiv	20	8	2	No	R N			1928
London 258—London Co	Gen	Indiv	20	8	2	No	R N			1928
J J Harrison Jr Sanit	Gen	Indiv	20	8	2	No	R N			1928
Madison 89—Davidson Co	Gen	Indiv	20	8	2	No	R N			1928
Madison Rural Sanit	Gen	Indiv	20	8	2	No	R N			1928
Maryville 498—Blount Co	Gen	Indiv	20	8	2	No	R N			1928
Carson's Hospital	Gen	Indiv	20	8	2	No	R N			1928
McMinnville 3914—Warren Co	Gen	Indiv	20	8	2	No	R N			1928
McMinnville Infirmary	Gen	Indiv	20	8	2	No	R N			1928
Memphis 23143—Shelby Co	Gen	Church	20	8	2	No	R N			1928
Baptist Memorial Hosp	Gen	Church	20	8	2	No	R N			1928
Coppell Chapel Hosp (col)	Gen	Church	20	8	2	No	R N			1928
Crippled Children's Hospital School	Ortho	Indep	20	8	2	No	R N			1928
Garly Ram eye Hospital	Gen	Indep	20	8	2	No	R N			1928
Hosp for Crippled Adults	Ortho	Indep	20	8	2	No	R N			1928
Jane Terrell Baptist Hospital (col)	Gen	Church	20	8	2	No	R N			1928
Lynchburg Sanitarium	N&M	Indiv	20	8	2	No	R N			1928
Memphis Eye Ear Nose and Throat Hospital	FEENT	Indiv	20	8	2	No	R N			1928
Memphis General Hosp	Gen	City	20	8	2	No	R N			1928
Mercy Hospital (col)	Gen	Indiv	20	8	2	No	R N			1928
Methodist Hospital	Gen	Church	20	8	2	No	R N			1928
St Joseph's Hospital	Gen	Church	20	8	2	No	R N			1928
Shelby County Emergency and Pellagra Hospital	Gen	County	20	8	2	No	R N			1928
U S Marine Hosp No 12	USPHS	Gen	20	8	2	No	R N			1928
U S Veterans Hospital	Gen	City	20	8	2	No	R N			1928
Wallace Sanitarium	N&M	Part	20	8	2	No	R N			1928
Willis O Campbell Clinic	Ortho	Part	20	8	2	No	R N			1928
Monterey 1731—Putnam Co	Gen	Indiv	20	8	2	No	R N			1928
Officer Sanatorium	TB	Indiv	20	8	2	No	R N			1928
Morristown 7303—Hamblen Co	Gen	Indep	20	8	2	No	R N			1928
Morristown Gen Hosp	Gen	Indep	20	8	2	No	R N			1928
Murfreesboro 7993—Rutherford Co	Gen	Indep	20	8	2	No	R N			1928
Rutherford Hospital	Gen	Indep	20	8	2	No	R N			1928
Nashville 15386—Davidson Co	Gen	Indiv	20	8	2	No	R N			1928
Barr Infirmary	Gen	Indiv	20	8	2	No	R N			1928
Central State Hospital	N&M	State	20	8	2	No	R N			1928
City View Sanitarium	N&M	Indiv	20	8	2	No	R N			1928
Davidson County Hospital	N&M	County	20	8	2	No	R N			1928
Davidson County Tubercu	N&M	County	20	8	2	No	R N			1928
Dr Jouis Hospital	TB	County	20	8	2	No	R N			1928
Geo W Hubbard Hospital (col)	N&M	Indiv	20	8	2	No	R N			1928
Millie E Hale Hosp (col)	Gen	Indep	20	8	2	No	R N			1928
Nashville General Hosp	Gen	City	20	8	2	No	R N			1928
Protestant Hospital	Gen	Indiv	20	8	2	No	R N			1928
St Thomas Hospital	Gen	Church	20	8	2	No	R N			1928
Vanderbilt Univ Hosp	Gen	Indep	20	8	2	No	R N			1928
Weymouth 989—Cocke Co	Gen	Indiv	20	8	2	No	R N			1928
F E Northcutt Infirmary	Gen	Indiv	20	8	2	No	R N			1928
Oakville 16—Shelby Co	Gen	Indiv	20	8	2	No	R N			1928
Oakville Memorial Sanat	TB	Cy&Co	20	8	2	No	R N			1928

TENNESSEE—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinsets	Outpatient Dept	Supt M D	R N	Layman	Year Est
Paris 8164—Henry Co	Gen	Indiv	16	10	4	Yes	R N			1926
McSwain Clinic	Gen	Indiv	16	10	4	Yes	R N			1926
Wiggins Clinic	Gen	Indiv	16	10	4	Yes	R N			1926
Pleasant Hill 160—Cumberland Co	Gen	Indiv	16	10	4	Yes	R N			1926
Upplands—Cumberland Co	Gen	Indiv	16	10	4	Yes	R N			1926
Mountain Sanatorium	Gen	Indep	16	9	3	Yes	M D			1922
Pressman's Home 160—Hawkins Co	Gen	Indep	16	9	3	Yes	M D			1922
International Printing Pressmen and Assistants Union Sanatorium	TB	Indep	40	30		No	M D			1911
Pulaski 367—Giles Co	Gen	Indiv	31	10	2	No	M D			1910
Pulaski Hospital	Gen	Indiv	31	10	2	No	M D			1910
Raleigh 287—Shelby Co	Gen	Indiv	20	10		No	M D			1921
Hayes Sanatorium	N&M	Indiv	20	10		No	M D			1921
Ridgely 196—Robertson Co	TB	Indep	40	30		No	M D			1912
Watauga Sanitarium	TB	Indep	40	30		No	M D			1912
Rockwood 380—Roane Co	Gen	Indep	30	20	5	No	R N			1918
Chamberlain Mem Hosp	Gen	Indep	30	20	5	No	R N			1918
Rockwood 1590—Hawkins Co	Gen	Indiv	10	5		No	R N			1926
Lyons Private Hospital	Gen	Indiv	10	5		No	R N			1926
Sewanee 530—Franklin Co	Gen	Church	50	20	12	Yes	Lay			1899
Emerald Hodgson Memorial Hospital	Gen	Church	50	20	12	Yes	Lay			1899
Shelbyville 5010—Bedford Co	Gen	Indiv	20	7	2	No	R N			1924
Bedford County Hospital	Gen	Indiv	20	7	2	No	R N			1924
Sweetwater 2271—Monroe Co	Gen	Indiv	14	4	4	No	M D			1923
Sweetwater Hospital	Gen	Indiv	14	4	4	No	M D			1923
Related Institutions										
Alcorn 200—Blount Co	TB	Indep	16	14		No	R N			1915
Mountain View Sanatorium	TB	Indep	16	14		No	R N			1915
Copperhill 1000—Polk Co	Indus	Indus	10	4		Yes	R N			1905
Tennessee Copper Company's Hospital	Indus	Indus	10	4		Yes	R N			1905
Ducktown 1326—Polk Co	Gen	Indiv	7			No	R N			1923
Kumey Gullin Hospital	Gen	Indiv	7			No	R N			1923
East Chattanooga 4720—Hamilton Co	County	County	200	140		No	M D			1929
Wm L Bork Mem Hosp	Instl	Instl	200	140		No	M D			1929
Fayetteville 3572—Lincoln Co	Gen	County	18	1	2	No	R N			1913
Lincoln County Hospital	Gen	County	18	1	2	No	R N			1913
Fountain Head 180—Sumner Co	Conv	Indep	20	10		No	R N			1914
Fountain Head Sanitarium	Conv	Indep	20	10		No	R N			1914
Hermitage 67—Davidson Co	State	State	24	8		No	Lay			1892
Confederate Soldiers Home	Instl	State	24	8		No	Lay			1892
Johnson City 2000—Washington Co	Instl	State	24	8		No	Lay			1892
Mountain Branch of the National Home for Disabled Volunteer Soldiers	Instl	Fed	666	691		No	M D			1903
Knoxville 10007—Knox Co	Gen	Indiv	6	1		No	R N			1922
Helen Mac Lannon Hospital (col)	Gen	Indiv	6	1		Yes	M D			1922
Rauv's Leach Infirmary	FEENT	Part	6	1		Yes	M D			1922
Tennessee School for Deaf	Instl	State	20	12		No	Lay			1881
Univ of Tennessee Infirmary	Instl	State	10	6		Yes	M D			1914
Maryville 498—Blount Co	Gen	Indiv	10	3		No	M D			1910
Burchfield's Eye Ear and Throat Hospital	FEENT	Indiv	10	3		No	M D			1910
Maryville College Hospital	Instl	Indep	13	2		No	Lay			1909
Memphis 20143—Shelby Co	Gen	Indiv	10	5		No	Lay			1876
Lilla Oliver Home	Mater	Indep	10	5		No	Lay			1876
Shelby County Hospital	Instl	County	600	550		No	M D			1810
Nashville 103866—Davidson Co	Gen	County	0	12		No	M D			1901
Davidson County Isolation Hospital	Isolation	County	0	12		No	M D			1901
Tennessee Industrial School	Instl	State	0	12		No	Lay			1810
Tennessee State Prison Hospital	Instl	State	10	110		No	M D			1900
Raleigh 287—Shelby Co	TB	Cy&Co	50	47		No	M D			1911
Cheerfield Farm Preventor	TB	Cy&Co	50	47		No	M D			1911
Richard City 522—Marion Co	Gen	Indiv	8	3	2	No	M D			1919
Divie Hospital	Gen	Indiv	8	3	2	No	M D			1919
Summary for Tennessee										
Hospitals and sanatoriums	Number	Beds	Patients	Basinsets						
Related institutions	21	1107	11	4						
Totals	110	1265	1014	4						
Refined registration	9	229		2						

TEXAS

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinsets	Outpatient Dept	Supt M D	R N	Layman	Year Est
Abilene 20170—Taylor Co	Epil	State	50	80		No	MD	1	0	
Abilene State Hospital	Gen	Indiv	50	50		No	MD	1	0	
Alexander Sanitarium	Gen	Church	50	50	1	8	No	MD	1	1
Weir Texas Baptist Sanit	Gen	Church					No	MD	1	1
Amarillo 43132—Potter Co	Gen	County	7	10	No	1		1	1	
Northwest Texas Ho p	Gen	Church	100	40	1	No	R N	1	1	
St Anthony's Hospital	Gen	Church								
Archer City 101—Archer Co	Gen	Indiv	15	7	6	10	MD	1		
Archer Ho pital										
Arlington 61—Tarrant Co	Gen	Indiv	20	14	No	1	MD	1	0	
Knights Templar Ho pital	Gen	Indiv								
Austin 3120—Travis Co	Gen	State	100	60	12	10	MD	1	0	
Austin City Ho pital	N&M	City	100	1	7	No	MD	1	0	
Austin State Ho pital	N&M	State	100	1	7	No	MD	1	0	
Austin State School	FeM	Indiv	100	1	7	No	MD	1	0	
Oaks Sanitarium	N&M	Indiv	2	30		No	MD	1	0	

TEXAS—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinsets	Outpatient Dept	Supt R N Layman	Year Est
St David's Hospital	Gen	Church	40	33	15	No	R N Lay	1918
Seton Infirmary	Gen	Church	150	50	15	No	R N Lay	1902
Balling 4 187—Runnels Co	Gen	Part	20	7	5	Yes	R N	1903
Balling Sanitarium	Gen	Part	20	7	5	Yes	R N	1903
Bastrop 1 895—Bastrop Co	Gen	Indep	16	6	2	No	M D	1923
T A Orgain Mem Hosp	Gen	Indep	16	6	2	No	M D	1923
Bay City 4 070—Matagorda Co	Gen	Indiv	10	5	6	No	M D	1922
Dr Loos Hospital	Gen	Indiv	10	5	6	No	M D	1922
Beaumont, 57 732—Jefferson Co	Gen	Indep	120	28	10	No	R N	1928
Beaumont General Hosp	Gen	Indep	120	28	10	No	R N	1928
Hotel Dieu Hospital	Gen	Church	17	97	14	No	R N	1897
Jefferson Co Luber Hosp	T B	County	10	57	14	No	Lay	1924
Beeville 4 806—Bee Co	Gen	Indiv	26	12	3	No	M D	1910
Beeville Hospital	Gen	Indiv	26	12	3	No	M D	1910
Belton 3 779—Bell Co	Gen	Part	14	8	5	Yes	I a J	1916
Belton General Hospital	Gen	Part	14	8	5	Yes	I a J	1916
Big Spring 13 730—Howard Co	Gen	Indep	27	6	1	No	R N	1916
Big Spring Hospital Corp	Gen	Indep	27	6	1	No	R N	1916
Blvings and Barcus Hosp	Gen	Part	19	6	1	Yes	M D	1929
Bonham 3 655—Fannin Co	Gen	Indep	10	9	5	No	R N	1903
S B Allen Mem Hosp	Gen	Indep	10	9	5	No	R N	1903
Borger 6 532—Hutchinson Co	Gen	Part	20	4	1	No	I a J	1920
Clutter & Draper Hospital	Gen	County	20	4	1	No	R N	1926
Hutchinson County Hosp	Gen	County	20	4	1	No	R N	1926
Bowie 3 131—Montague Co	Gen	Indiv	20	1	1	No	R N	1926
Bowie Clinic Hospital	Gen	Indiv	20	1	1	No	R N	1926
Brackettville 1 822—Kinney Co	Gen	Army	24	11	2	Yes	M D	1887
Station Hospital	Gen	Army	24	11	2	Yes	M D	1887
Brady 3 987—McCulloch Co	Gen	Part	50	16	8	No	I a J	1917
Brady Sanitarium	Gen	Part	50	16	8	No	I a J	1917
Breckenridge 7 569—Stephens Co	Gen	Indep	2	12	3	No	R N	1926
West Side Hospital	Gen	Indep	2	12	3	No	R N	1926
Brenham 3 974—Washington Co	Gen	Indep	14	5	2	No	R N	1920
Brenham Hospital	Gen	Indep	14	5	2	No	R N	1920
Brownsville 22 021—Cameron Co	Gen	Church	50	1	5	No	I a J	1922
Veroy Hospital	Gen	Church	50	1	5	No	I a J	1922
Station Hospital	Gen	Army	50	6	1	No	M D	1868
Brownwood 12 789—Brown Co	Gen	Indep	3	12	2	No	I a J	1922
Central Texas Hospital	Gen	Indep	3	12	2	No	I a J	1922
Medical Arts Hospital	Gen	Indep	3	12	2	No	I a J	1922
Miss Stumps Sanitarium	Gen	Indep	12	6	2	No	R N	1921
Cameron 4 563—Milam Co	Gen	Part	3	1	1	No	R N	1913
Cameron Hospital	Gen	Part	3	1	1	No	R N	1913
Canadian 2 068—Hemphill Co	Gen	Indiv	12	1	1	No	M D	1917
Canadian Hospital	Gen	Indiv	12	1	1	No	M D	1917
Center 2 010—Shelby Co	Gen	Indiv	12	4	1	No	M D	1927
Center Sanitarium	Indus	Indiv	12	4	1	No	M D	1927
Warren Hospital	Surg	Part	12	4	1	No	M D	1924
Childress 7 167—Childress Co	Gen	Part	28	5	4	No	R N	1929
Jeter Townsend Hospital	Gen	Part	28	5	4	No	R N	1929
Cisco 6 027—Eastland Co	Gen	Indiv	26	6	1	No	R N	1920
Graham Sanitarium	Gen	Indiv	26	6	1	No	R N	1920
Cleburne 11 330—Johnson Co	Gen	Indiv	20	10	1	Yes	M D	1916
Cleburne Sanitarium	Gen	Indiv	20	10	1	Yes	M D	1916
Coleman 6 078—Coleman Co	Gen	County	30	1	2	No	M D	1923
Overall Memorial Hospital	Gen	County	30	1	2	No	M D	1923
Colorado 4 671—Mitchell Co	Gen	Indiv	20	7	3	No	R N	1918
O L Root Hospital	Gen	Indiv	20	7	3	No	R N	1918
Conroe 2 457—Montgomery Co	Gen	Indiv	18	13	4	No	R N	1910
Mary Swain Sanitarium	Gen	Indiv	18	13	4	No	R N	1910
Corpus Christi, 27 741—Nueces Co	Gen	Indep	60	25	10	No	R N	1920
Fred Roberts Mem Hosp	Gen	Indep	60	25	10	No	R N	1920
Medical Professional Hosp	Gen	Church	34	20	4	No	R N	1930
Spohn Hospital	Gen	Church	34	20	4	No	R N	1930
Corsicana 15 202—Navarro Co	Gen	Indep	20	10	2	No	M D	1927
Corsicana Hosp & Clinic	Gen	Indep	20	10	2	No	M D	1927
Navarro Clinic	Gen	Indep	24	14	4	No	R N	1918
Navarro County Hospital	Gen	County	60	30	7	No	R N	1915
Quero 4 672—De Witt Co	Gen	Part	30	19	1	No	M D	1911
Burns Hospital	Gen	Part	30	19	1	No	M D	1911
Lutheran Hospital	Gen	Church	35	9	2	Yes	I a J	1917
Dallas 210 475—Dallas Co	Gen	Church	100	226	40	Yes	Lay	1909
Baylor Hospital	Gen	Church	100	226	40	Yes	Lay	1909
Bradford Memorial Hospital for Babies	Chil	Indep	50	22	10	Yes	R N	1913
Carroll Driver Girard Clinic and Orthopedic Hospital	Ortho	Indep	25	15	1	Yes	R N	1925
Dallas Methodist Hosp	Gen	Church	87	53	13	Yes	Lay	1928
Jones Eye Ear Nose and Throat Hosp and Clinic	GEN T	Part	11	5	1	No	R N	1928
Parkland Hospital	Gen	Cy & Co	285	201	34	Yes	M D	1884
Pinkston Clinic (col)	Gen	Indiv	15	8	2	Yes	M D	1928
Rushing Clinic and Sanit	Gen	Indiv	25	18	2	No	M D	1928
St Paul's Hospital	Gen	Church	310	190	40	Yes	R N	1896
Southern Conv Sanit	Gen	Indiv	30	20	6	No	R N	1927
Texas Scottish Rite Hosp for Crippled Children	Ortho	1 rat	58	51	1	Yes	R N	1923
Timberlawn Sanitarium	N & M	Indep	40	27	1	No	M D	1917
Woodlawn Sanitarium	T B	Cy & Co	120	112	1	No	M D	1913
Denton 13 500—Grayson Co	Gen	Indep	20	12	6	No	M D	1913
Denton Hospital	Gen	Indep	20	12	6	No	M D	1913
Veroy Hospital (col)	Gen	Frat	60	50	8	No	M D	1921
Missouri Kansas & Texas Railroad Employees Hosp	Indus	Indus	60	40	1	Yes	M D	1921
Denton 9 587—Denton Co	Gen	Part	33	12	6	No	R N	1925
Denton Hosp and Clinic	Gen	Part	33	12	6	No	R N	1925
Fagle 1 ass 3 000—Maverick Co	Gen	Indiv	12	1	1	No	R N	1918
Cates Hospital	Gen	Indiv	12	1	1	No	R N	1918
Hidalgos 4 821—Hidalgo Co	Gen	Indiv	6	1	1	No	R N	1931
Ponton Hospital	Gen	Indiv	6	1	1	No	R N	1931
Flectra 6 712—Wichita Co	Gen	Part	20	7	4	No	R N	1927
Parmer Ogle Hospital	Gen	Part	20	7	4	No	R N	1927
El Paso 10 421—El Paso Co	Gen	Cy & Co	100	90	8	Yes	M D	1914
El Paso City County Hosp	Gen	Cy & Co	100	90	8	Yes	M D	1914
El Paso Masonic Hospital	Gen	Frat	41	38	16	No	Lay	1922

TEXAS—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinsets	Outpatient Dept	Supt R N Layman	Year Est
Hendricks Iowa Sanat	T B	Part	80	40	1	No	Lay	1914
Homan Sanatorium*	T B	Part	104	48	1	No	Lay	1906
Hotel Dieu Sisters Hosp	Gen	Church	100	73	23	No	R N	1894
Long Sanatorium	T B	Indiv	40	20	1	No	M D	1910
Price Sanatorium	T B	Indiv	20	8	1	No	M D	1914
Providence Hospital*	Gen	Indiv	50	18	6	No	R N	1907
St Josephs Sanatorium	T B	Church	70	50	1	No	Lay	1917
Southern Baptist Sanat	T B	Church	80	40	1	Yes	M D	1909
William Beaumont General Hospital*	Gen	Army	500	371	7	Yes	M D	1911
Ennis 7 069—Ellis Co	Gen	City	20	10	5	No	Lay	1914
Municipal Hospital	Gen	City	20	10	5	No	M D	1910
Falfurrias 1 820—Brooks Co	Gen	Indiv	20	10	1	No	M D	1910
Falfurrias Hospital	Gen	Indiv	20	10	1	No	M D	1910
Floyd 2 637—Floyd Co	Gen	Part	12	4	1	No	M D	1903
Dr Smith & Smith Sanit	Surg	Part	12	4	1	No	M D	1903
Forney 1 710—Kaufman Co	Gen	Indep	20	4	8	Yes	R N	1917
Forney Sanitarium	Gen	Indep	20	4	8	Yes	R N	1917
Fort Worth 163 447—Farrant Co	Gen	Church	70	26	15	No	R N	1905
All Saints Episcopal Hosp	Gen	Church	40	30	1	No	M D	1910
Arlington Heights Sanit	N & M	Indiv	40	30	1	No	M D	1910
Baptist Hospital*	Gen	Church	40	30	1	No	Lay	1921
City and County Hosp *	Gen	Cy & Co	11	7	10	Yes	R N	1914
W I Cook Mem Hosp	Gen	Indep	35	20	8	No	R N	1923
Fort Worth Childrens Hosptal*	Chil	Indep	37	30	1	No	R N	1918
Harris Clinic Hospital*	Gen	Indiv	10	2	10	Yes	M D	1919
Harrison Clinic & Hospital	Gen	Indiv	12	2	6	No	R N	1923
St Josephs Infirmary**	Gen	Church	200	81	16	No	R N	1889
Freepoint 3 102—Brazoria Co	Gen	Indiv	20	8	6	No	Lay	1917
Freepoint Hospital	Gen	Indiv	20	8	6	No	Lay	1917
Galveston 8 915—Cooke Co	Gen	Indep	20	22	6	No	R N	1916
Galveston Sanitarium*	Gen	Indep	20	22	6	No	R N	1916
Galveston 5 708—Galveston Co	Gen	City	70	28	24	Yes	M D	1890
John Sealy Hospital*	Gen	City	70	28	24	Yes	M D	1890
St Marys Infirmary**	Gen	Church	100	126	10	No	R N	1866
Station Hospital	Gen	Army	20	10	1	Yes	M D	1900
Georgetown 7 583—Williamson Co	Gen	Part	18	6	4	No	M D	1923
Martin Hospital	Gen	Part	18	6	4	No	M D	1923
Gilmer 1 353—Upshur Co	Gen	Indiv	10	4	2	No	Lay	1917
Linwood Sanitarium	Gen	Indiv	10	4	2	No	Lay	1914
Oaklawn Sanitarium	Gen	Indiv	10	4	2	No	Lay	1914
Gonzales 3 800—Gonzales Co	Gen	Indiv	20	10	5	No	R N	1911
Holmes Hospital	Gen	Indiv	20	10	5	No	R N	1911
Gorman 1 144—Pastland Co	Gen	Part	24	14	1	No	M D	1910
Blackwell Sanitarium	Gen	Part	24	14	1	No	M D	1910
Graham 4 981—Young Co	Gen	Indep	16	9	2	No	R N	1921
Graham Hospital	Gen	Indep	16	9	2	No	R N	1921
Greenville 12 407—Hunt Co	Gen	Indiv	16	5	4	No	Lay	1912
Dr F P Becton's Hospital	Surg	Indiv	16	5	4	No	Lay	1912
Greenville Hospital	Gen	Indiv	20	10	4	No	R N	1905
Dr Joe Becton's Hospital	Surg	Indiv	17	8	2	No	Lay	1901
Dr A S McBride's Hosp	N & M	Indiv	30	4	1	No	M D	1914
Groesbeck 2 009—Imestone Co	Gen	Indiv	12	4	3	No	Lay	1923
Dr Cox's Hospital	Gen	Indiv	12	4	3	No	Lay	1923
Gulf 7 15—Matagorda Co	Gen	Indiv	14	4	2	No	R N	1921
Texas Gulf Sulphur Company Hospital	Indus	Indus	14	4	2	No	R N	1921
Hallettsville 1 406—Lavaca Co	Gen	Indiv	18	6	3	Yes	M D	1918
Renner Hospital	Gen	Indiv	18	6	3	Yes	M D	1918
Hamilton 2 084—Hamilton Co	Gen	Part	40	20	5	Yes	M D	1922
Hamilton Sanitarium*	Gen	Part	40	20	5	Yes	M D	1922
Harlingen 12 124—Cameron Co	Gen	Church	34	21	4	No	R N	1910
Valley Baptist Hospital*	Gen	Church	34	21	4	No	R N	1910
Henderson 2 032—Rusk Co	Gen	Indep	20	5	2	No	R N	1928
Henderson Hospital	Gen	Indep	20	5	2	No	R N	1928
Hereford 2 448—Deaf Smith Co	Gen	County	15	4	3	No	R N	1914
Deaf Smith County Hosp	Gen	County	15	4	3	No	R N	1914
Hillsboro 7 823—Hill Co	Gen	Indiv	20	9	2	No	M D	1922
Boyd Sanitarium	Gen	Indiv	20	9	2	No	M D	1922
Houston 292 352—Harris Co	Childrens	Dept of the Houston Tuber Hosp	167	141	28	No	Lay	1907
Autry Mem Hospital (Childrens)	Childrens	Dept of the Houston Tuber Hosp	167	141	28	No	Lay	1907
Baptist Hospital*	Gen	Church	167	141	28	No	Lay	1907
Blair's Sanitarium	Gen	Indiv	15	7	1	No	M D	1901
Dr Greenwood's Sanit	N & M	Indep	40	28	1	No	M D	1912
Heights Clinic	Gen	Indep	30	12	5	Yes	M D	1924
Hermann Hospital**	Gen	Indep	174	128	30	Yes	Lay	1920
Houston Eye & Ear Nose and Throat Hospital	Gen	Indep	174	128	30	Yes	Lay	1920
Houston Negro Hospital	Gen	Indep	25	10	3	No	R N	1914
Houston Tuber Hospital	Gen	Indep	3	24	3	No	R N	1927
Houston Tuber Hosp	T B	Cy & Co	175	130	1	No	R N	1917
Jefferson Davis Hosp *	Gen	Cy & Co	170	140	16	Yes	Lay	1919
Methodist Hospital	Gen	Church	90	62	10	No	Lay	1924
Park View Hospital	Gen	Indep	20	5	4	No	R N	1929
St Josephs Infirmary*	Gen	Church	207	150	18	No	R N	1887
Southern Pacific Hospital	Indus	Indus	170	100	1	Yes	Lay	1911
Turner Urological Institute	Urol	Indiv	17	11	1	Yes	M D	1923
Jacksonville 6 748—Cherokee Co	Gen	Indep	38	22	5	No	R N	1910
Nan Travis Sanitarium	Gen	Indep	38	22	5	No	R N	1910
Jasper 3 393—Jasper Co	Gen	Part	23	15	3	Yes	Lay	1925
Hardy Hancock Hospital	Gen	Indiv	31	10	2	No	Lay	1930
Jasper General Hospital	Gen	Indiv	31	10	2	No	Lay	1930
Kelly Field—Bexar Co	Gen	Army	30	15	1	Yes	M D	1917
Station Hospital	Gen	Army	30	15	1	Yes	M D	1917
Kerrville 4 546—Kerr Co	Gen	Indiv	20	10	2	No	M D	1911
Kerrville Clinic and Secor Hospital	Gen	Indiv	30	15	1	No	M D	1920
Mountain View Sanatorium	T B	Indiv	86	60	1	No	Lay	1912
Thompson Sanatorium	T B	Indiv	86	60	1	No	Lay	1912
Kingsville 6 815—Kleberg Co	Gen	County	50	18	1	No	R N	1915
Kleberg County Hospital	Gen	County	50	18	1	No	R N	1915
Knox City 906—Knox Co	Gen	County	15	9	6	No	Lay	1916
Knox County Hospital	Gen	County	15	9	6	No	Lay	1916

TEXAS—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt	Phys R N	Year Est
Lagrange 294—Fayette Co	Gen	Indep	45	20	5	No	R N		1920
Lagrange Hospital									
Lamesa 25—Dawson Co	Gen	Part	15	5	4	No	M D		1921
Lamesa Sanitarium									
Lovells 6—Bennett Hosp	Gen	Part	14	1	2	No	R N		1921
Lovells 6—Bennett Hosp									
Laredo 9618—Webb Co	Gen	Church	56	21	10	No	Lay		1891
Laredo Hospital	Gen	Army	2	0		Yes	M D		1850
Leflore 219—Hart Co									
U S Veterans Hosp No 03	TB	Vet Bur	4	112		No	M D		1923
Livingston 1165—Polk Co	Gen	Indiv	20	8		No	M D		1922
Bergman Hospital									
Lockhart 477—Caldwell Co	Gen	Indep	20	1		No	R N		1912
Lockhart Sanitarium									
Longview 503—Orange Co	Gen	Indiv	12	1	2	No	M D		1923
Markham Sanitarium									
Lubbock 2036—Lubbock Co	Gen	Indep	8	4	1	No	Lay		1918
Lubbock Sanitarium	Gen	Indep	60	20		Yes	R N		1920
West Texas Hospital									
Lufkin 7311—Angulina Co	Gen	County	3	21	4	No	R N		1919
Angellina County Hosp									
Luling 90—Caldwell Co	Gen	Indiv	2	10	4	No	R N		1916
Luling Hospital									
Marfa 3009—Piedra Co	Gen	Army	50	10		No	M D		1916
Marfa Station Hospital									
Marlin 538—Fall Co	Gen	Indiv	4	21	2	No	M D		1916
Bule-Allen Hospital	Gen	Indep	4	15	2	No	M D		1912
Bule Clinic & Marlin Sanit	Gen	Indiv	10	4	2	Yes	M D		1923
Shaw Clinic and Hospital	Gen	Indep	42	18	1	Yes	M D		1904
Torbett Sanitarium									
Marshall 16203—Harrison Co	Gen	Indep	30	12		No	R N		1911
Kahn Memorial Hospital	Gen	Indiv	10			No	M D		1914
Sheppard Sanitarium (col)									
Texas and Pacific Railway Employees Hospital	Indus	Indus	10	7		Yes	M D		1886
McCamey 446—Upton Co	Indus	Indus	11	5	1	Yes	M D		1919
Humble Hospital									
Mckinney 707—Collin Co									
Burton Eye Ear Nose and Throat Sanitarium	GENT	Indiv	12	5		No	M D		1911
Mckinney City Hospital	Gen	City	26	17	4	No	R N		1921
Memphis 4257—Hall Co	Gen	Indiv	1	3	1	No	R N		1924
Memphis Hospital									
Mercedes 600—Hidalgo Co	Gen	Indep	28	12	6	No	R N		1910
Mercedes General Hospital									
Midland 344—Midland Co	Gen	Indiv	20	6	1	No	Lay		1927
John B Thomas Hospital									
Neogdoches 6087—Neogdoches Co	Gen	City	31	10	2	No	R N		1929
City Memorial Hospital									
Navasota 5128—Grimes Co	Gen	Indiv	20		4	No	R N		1929
Brazos Valley Sanitarium									
New Braunfels 6742—Comal Co	Gen	City	14	10	2	No	R N		1892
Comal Sanitarium	Gen	Indiv		6		No	M D		1919
Olney 4138—Young Co	Gen	Indiv	20	10	1	No	M D		1927
Hamilton Hospital									
Orange 7913—Orange Co	Gen	Indep	6	3	7	Yes	M D		1920
Frances Ann Luther Hospital									
Paducah 2807—Cottle Co	Gen	City	40	10	6	No	M D		1929
W Q Richards Mem Hosp									
Palestine 1144—Anderson Co	Gen	Indus	7	23	2	Yes	M D		1884
International and Great Northern RR Employees Hospital	Gen	Indep	16	6	3	No	R N		1902
Palestine Sanitarium									
Speagle DuPuy Hosp and Clinic	Gen	Indep	2	5		No	M D		1917
Paris 1649—Lamar Co	Gen	County	55	18	4	No	R N		1923
Lamar County Hospital	Gen	Church	47	6	4	No	R N		1911
St Josephs Infirmary	Gen	Indep	60	43	4	No	R N		1912
Sanitarium of Paris									
Pecos 3304—Reeves Co	Gen	Part	20	6	4	No	R N		1929
Camp and Camp Hospital									
Perryton 2874—Ochiltree Co	Gen	Part	20	9	2	No	M D		1930
Plaza Hospital									
Plainview 8534—Hale Co	Gen	Indiv	4	20	6	Yes	R N		1914
Plainview Sanitarium and Clinic									
Prarie View—Waller Co	Gen	State	50	26	6	Yes	M D		1918
Prarie View Hosp (col)	Gen								
Quannah 4464—Hardeman Co	Gen	Part	3	5	3	No	R N		1912
Quannah Hospital									
Ranger 6708—Eastland Co	Gen	City & Co	30	10	3	No	R N		1924
City County Hospital	Gen	Indep	18	10		Yes	R N		1925
West Texas Clinic Hosp									
Rogers 2283—Starr Co	Gen	Army	30	5		Yes	M D		1886
Station Hospital									
Rosenberg 1941—Ft Bend Co	Gen	Indiv	11	5	1	No	R N		1922
Rosenberg Hospital									
Rusk 3530—Cherokee Co	N & M	State	1450	1300		No	M D		1918
Rusk Station Hospital									
San Angelo 25308—Tom Green Co	TB	Indiv	30	9		No	Lay		1907
The Bungalows	Gen	Church	32	26	6	No	R N		1910
St Johns Hospital	Gen	Church	50	2	8	No	Lay		1923
San Angelo Hospital									
San Antonio 231542—Bexar Co	Gen	Indep	7	40	10	No	Lay		1908
Baylor Hospital									
Lye Ear Nose and Throat Hospital	EFENT	Indep	20	5		Yes	R N		1924
Dr Farmer s Sanatorium	TB	Indiv	15	10		No	M D		1920
Grace Lutheran Sanatorium for Tuberculosis	TB	Church	50	40		No	Lay		1913
Dr Kenney s sanatorium	Gen	Indiv	70	53	12	No	M D		1904
Lee Surgical Hospital	Gen	Indep	30	17	8	No	R N		1909

TEXAS—Cont.nued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Bathrooms	Inpatient Dept.	R N	Year
Medical & Surgical Hosp.	Gen	Indep	115	60	15	Yes	R N	1927
Medical Arts Hospital	Gen	Indep	34	21	3	No	R N	1927
Dr. Moody's Sanitarium	N & M	Indep	56	32	No	M D	R N	1903
M. H. Hospital	Gen	Indep	160	80	27	No	R N	1930
P and S Hospital	Gen	Indep	75	43	15	No	R N	1901
Robert B. Green Memorial Hospital	Gen	Cy & Co	210	160	15	Yes	R N	1917
San Antonio State Hosp.	N & M	State	2,192	213	No	M D	R N	1892
Santa Rosa Hospital	Gen	Church	342	103	44	Yes	R N	1890
Station Hospital	Gen	Army	40	9	1	Yes	R N	1911
Station Hospital Ft. Sam Houston	Gen	Army	750	538	16	Yes	M D	1890
Woodmen of the World War Memorial Hospital	TB	Frat	150	150	No	M D	R N	1923
Sanatorium 463—Tom Green Co.	Gen	State	662	500	No	M D	R N	1912
State Tuberculosis Sanat.	TB	State	662	500	No	M D	R N	1912
San Marcos 5134—Hays Co.	Gen	Cy & Co	20	4	3	No	R N	1923
Soldiers and Sailors Memorial Hospital	Gen	Cy & Co	20	4	3	No	R N	1923
Santa Anna 1883—Coleman Co.	Gen	Indiv	36	18	2	No	M D	1917
Sealy Hospital	Gen	Indiv	14	4	2	No	Lay	1908
Sealy 1640—Austin Co.	Gen	Indiv	22	6	3	No	R N	1927
Severn Hospital	Gen	Indep	22	6	3	No	R N	1927
Severn 2106—Baylor Co.	Gen	County	20	3	2	No	R N	1925
Shamrock 750—Wheeler Co.	Gen	Indiv	20	5	4	No	M D	1927
Dr. Beach Sanitarium	Gen	Indiv	30	10	5	Yes	Lay	1914
Shamrock General Hospital	Gen	Indiv	30	10	5	Yes	Lay	1914
Sherman 171—Grayson Co.	Gen	Church	71	28	6	No	R N	1902
St. Vincent's Sanitarium	Gen	Church	66	6	4	No	Lay	1907
Wilson 1 Jones Hospital	Gen	Indep	12	6	2	No	M D	1924
Shiner 132—Lavaca Co.	Gen	Indiv	12	8	1	Yes	M D	1927
Dr. Wagner's Hospital	Gen	Indiv	12	8	1	Yes	M D	1927
Slisbee 3600—Hardin Co.	Indus	Indep	22	8	1	Yes	M D	1927
Kelly Hospital	Indus	Indep	22	8	1	Yes	M D	1927
Slaton 1 Lubbock Co.	Gen	Church	50	20	6	No	R N	1929
Mersey Hospital	Gen	Church	50	20	6	No	R N	1929
Spur 1599—Dickens Co.	Gen	Indiv	20	4	4	No	M D	1920
Nichols Sanitarium	Gen	Indiv	20	4	4	No	M D	1920
Stanford 401—Jones Co.	Gen	Indep	40	20	5	Yes	Lay	1910
Stanford Sanitarium	Gen	Indep	40	20	5	Yes	Lay	1910
Stephenville 3045—Ft. Worth Co.	Gen	Indiv	25	14	1	Yes	M D	1927
Stephenville Hospital	Gen	Indiv	25	14	1	Yes	M D	1927
Sugar Land 1919—Ft. Bend Co.	Gen	Indep	30	3	2	No	Lay	1922
Jaura Eldridge Memorial Hospital	Gen	Indep	30	3	2	No	Lay	1922
Sweetwater 1045—Nolan Co.	Gen	Part	11	8	6	No	R N	1922
Sweetwater Clinic Hospital	Gen	Part	11	8	6	No	R N	1922
Saylor 7464—Williamson Co.	Gen	Indiv	25	19	No	R N	1920	
Dock and Stromberg Clinic	Gen	Indiv	12	6	2	Yes	R N	1915
Taylor Sanitarium	Gen	Indep	26	11	3	Yes	Lay	1924
Temple 1535—Bell Co.	Gen	Indiv	26	11	3	Yes	Lay	1924
Gulf Colorado and Santa Fe Hospital (affil.)	Indus	Indus	140	60	No	M D	1891	
King's Daughters' Clinic and Ho pital	Gen	Indep	116	60	8	Yes	R N	1897
Scott and White Hosp.	Gen	Indep	192	115	8	Yes	Lay	1904
Wood on Fye Ear No e and Throat Hospital	E R N T	Indiv	13	-	No	Lay	1903	
Terrell 870—Kaufman Co.	Gen	Part	25	17	4	No	R N	1928
Alexander Holton Hospital	N & M	State	2,600	155	No	M D	R N	1890
Terrell State Hospital	N & M	State	2,600	155	No	M D	R N	1890
Texarkana 16602—Bowling Texarkana Hospital	Gen	Indep	40	-	No	R N	1900	
Tyler 1711—Smith Co.	Gen	Indep	17	-	4	No	R N	1911
Tyler General Hospital	Gen	Indep	17	-	4	No	R N	1911
Vernon 9197—Wilbarger Co.	Gen	Indiv	20	1	4	No	M D	1910
King Hospital and Water nity Home	Gen	Indiv	20	11	8	No	R N	1911
Moore Brothers Hospital	Gen	Indiv	20	11	8	No	R N	1911
Victoria 7421—Victoria Co.	Gen	Indep	31	13	6	No	M D	1911
Victoria Hospital	Gen	Indep	31	13	6	No	M D	1911
Von Ormy 213—Bexar Co.	Gen	Indep	31	13	6	No	M D	1911
Von Ormy Cottage Sanitarium	TB	Indep	40	-	No	Lay	1914	
Waco 5284—McLennan Co.	Gen	Church	90	40	10	No	Lay	1910
Central Texas Baptist Sanitarium	Gen	Church	40	19	-	Yes	M D	1911
Colgin Hosp and Clinic	Gen	Church	140	80	1	Yes	R N	1910
Providence Sanitarium	Gen	Church	140	80	1	Yes	R N	1910
Waxahachie 542—Ellis Co.	Gen	Indep	70	1	4	No	R N	1911
New Waxahachie Sanit	Gen	Indep	70	1	4	No	R N	1911
Wellington 3570—Collingsworth Co.	Gen	Indiv	1	4	-	No	R N	1913
Wellington Hospital	Gen	Indiv	1	4	-	No	R N	1913
Wharton 2401—Wharton Co.	Gen	Indiv	1	4	-	No	R N	1913
Cane Valley Hospital	Gen	Indiv	1	4	-	No	R N	1913
Whitenburg—Hutchinson Co.	In luc	Indu	1	4	-	Yes	M D	1911
Panex Hospital	In luc	Indu	1	4	-	Yes	M D	1911
Wichita Falls 4760—Wichita Co.	Gen	Indep	2	12	10	Yes	R N	1911
Hargrave-Walker Hospital and Clinic	Gen	Indep	2	12	10	Yes	R N	1911
Dr. White's Sanitarium	N & M	Part	2	12	10	Yes	R N	1911
Wichita Falls Clinic Hosp	Gen	State	1	0	1	Yes	R N	1911
Wichita Falls State Ho pital	N & M	Cy & Co	100	0	1	No	R N	1911
Wichita General Ho pital	Gen	Cy & Co	100	0	1	No	R N	1911
Wink 3063—Winkler Co.	Gen	Indiv	2	14	-	No	R N	1911
General Ho pital	Gen	Indiv	2	14	-	No	R N	1911
Yoskum 66—Lavaca Co.	Gen	City	2	14	-	No	R N	1911
Huth Memorial Ho pital	Gen	City	2	14	-	No	R N	1911
Yorktown 185—De Witt Co.	Gen	Indiv	1	11	-	No	M D	1911
Allen Ho pital	Gen	Indiv	1	11	-	No	M D	1911

Key to symbols and abbreviations is on page 1023

TEXAS—Continued

Related Institutions	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt M D R N Layman	Year Est
Arlington 3 661—Tarrant Co								
Berachah Home	Mater	Indep	9	9	4	No	Lay	1894
Austin 53 120—Favis Co								
Texas Confederate Home	Inst l	State	140	70	No	Lay	1891	
Texas Confederate Woman's Home	Inst l	State	107	10	No	Lay	1908	
Texas School for the Blind	Inst l	State	36	7	Yes	Lay	1886	
Texas School for the Deaf	Inst l	State	41	6	No	Lay	1881	
Bellville 1 733—Austin Co								
Bellville Hospital	Gen	Part	8	-	2	No	R N	1910
Clarksburg 2 932—Red River Co								
Clarksburg Hospital	Gen	Indep	10	5	1	No	Lay	1921
College Station 40—Brazos Co								
Agricultural and Mechanical College Hospital	Inst l	State	100	10	Yes	M D	1886	
Comfort 713—Hendall Co								
Hillcrest Sanitarium and Private Hospital	Gen	Indiv	6	2	No	M D	1914	
Crowell 1,946—Foard Co								
Foard County Hospital	Gen	Indep	10	4	No	Lay	1916	
Crystal City 6 606—Zavalla Co								
Crystal Hospital	Gen	Indiv	10	1	2	Yes	M D	1920
Dallas 260 475—Dallas Co								
The Cedars Maternity Sanitarium	Mater	Indiv	20	7	3	No	Lay	1921
Union Hospital	Iso	Cy & Co	4	2	No	Lay	1900	
Virginia K Johnson Home	Mater	Church	20	-	-	No	Lay	1881
El Paso 102 421—El Paso Co								
El Paso Smelter Hospital	Indus	Indus	12	1	No	M D	1888	
Ft Worth 163 44—Tarrant Co								
Howard Sanitarium	Conv	Indiv	8	2	No	Lay	1912	
Masonic Home and School Hospital	Inst l	Frat	40	8	No	Lay	1888	
Tarrant County Home for the Aged	Inst l	County	27	2	No	Lay	1924	
Fredericksburg 2 416—Gillespie Co								
Fredericksburg Sanitarium	Gen	Part	8	1	No	Lay	1901	
Gatesville 2 601—Coryell Co								
State Juvenile Training School	Inst l	State	30	20	No	R N	1889	
Hallettsville 1 406—Lavaca Co								
Hallettsville Hospital	Gen	Indiv	7	3	1	No	R N	1922
Huntsville 5 928—Walker Co								
Texas State Prison Hosp	Inst l	State	6	4	Yes	M D	1817	
Hutchins 368—Dallas Co								
Dallas County Farm	Conv	Cy & Co	180	10	No	M D	1872	
Irann—Pecos Co								
Irann Hospital	Gen	Indiv	6	1	1	No	M D	1929
Longview 5 036—Clegg Co								
Hurst Eye Ear Nose and Throat Hospital	EENT	Indiv	8	3	No	M D	1920	
Mason, 1,150—Mason Co								
Mason Sanitarium	Gen	Indiv	8	-	No	R N	1915	
Myra 417—Coolidge Co								
Mersey Hospital	Gen	Indiv	8	2	2	No	M D	1917
Nixon 1 037—Gonzales Co								
Crest View Hospital	Gen	Indiv	8	2	2	No	M D	1908
Pensacola 2 536—Rio Co								
Dr Beall's Day Hospital	Gen	Indiv	10	5	2	No	M D	1906
Poteet 1 931—Atascosa Co								
Community Hospital	Gen	Indiv	7	2	1	No	R N	1920
San Antonio 231 542—Bexar Co								
Salvation Army Women's Home and Hospital	Mater	Church	10	4	10	No	Lay	1910
Southton 89—Bexar Co								
Bexar County Home for the Aged	Inst l	County	50	54	No	R N	1894	
Taylor 7 463—Williamson Co								
Dr Floeckinger's Sanit	Gen	Indiv	7	2	2	No	R N	1910
Winters 2 493—Puntland Co								
Winters Sanitarium	Gen	Part	6	3	No	Lay	1916	
Summary for Texas								
Hospitals and sanatoriums	Number	Beds	Patients	Basinets				
Related institutions	260	26 487	19 538	1 232				
	34	1 041	529	40				
Totals	294	27 528	20 067	1 272				
Refused registration	17	330		29				

UTAH

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt M D R N Layman	Year Est
Bingham Canyon 3 248—Salt Lake Co								
Bingham Canyon Hospital	Gen	Indep	40	32	5	No	Lay	1917
Brigham 5 093—Box Elder Co								
Coolley Hospital	Gen	Indiv	10	3	5	No	Lay	1926
Cedar City 3 610—Iron Co								
Iron County Hospital	Gen	County	20	14	6	No	R N	1922
Ft Douglas—Salt Lake Co								
Station Hospital	Gen	Army	50	11	Yes	M D	1862	
Ft Duchene 100—Uintah Co								
Utah and Ouray Agency Indian Hospital	Gen	Indian	16	6	2	Yes	Lay	1915
Heber 2 477—Wasatch Co								
Heber Hospital	Gen	Part	12	4	4	No	M D	1920
Lehi 2 86—Utah Co								
Lehi Hospital	Gen	Indiv	15	-	No	M D	1913	

UTAH—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt M D R N Layman	Year Est
Jogan 9 979—Cache Co								
Cache Valley General Hosp	Gen	Indep	24	12	No	M D	1923	
Win Budic Mem Hosp	Gen	Indep	50	33	10	Yes	Lay	1914
Millford 1 517—Beaver Co								
Millford Hospital	Gen	Indiv	14	7	5	No	M D	1904
Moab 5 53—Grand Co								
Grand Co Public Hosp	Gen	County	10	5	2	No	R N	1918
Ogden 40 212—Weber Co								
Thomas D Dec Memorial Hospital	Gen	Church	100	96	30	Yes	Lay	1910
Park City 4 251—Summit Co								
Park City Minors Hospital	Indus	Indus	40	25	6	Yes	Lay	1903
Price 4 084—Carbon Co								
Price City Hospital	Gen	City	25	16	Yes	Lay	1906	
Provo 14 766—Utah Co								
Ard Hospital	Gen	Indiv	20	6	No	M D	1923	
Utah State Hospital	N&M	State	90	291	No	M D	1880	
St George 2 431—Washington Co								
Washington County Hosp	Gen	Indep	10	7	No	M D	1913	
Salina 1 800—Weber Co								
Salina Hospital	Gen	Part	20	8	No	M D	1914	
Salt Lake City 140 277—Salt Lake Co								
Dr W H Groves Center								
Day Salts Hospital	Gen	Church	406	246	60	No	Lay	1905
Holy Cross Hospital	Gen	Church	27	162	43	No	R N	1886
Father Day Salts Chl								
Jordan's Hospital	Chl	Church	40	30	No	R N	1922	
Mountain View Sanitarium	N&M	Indiv	10	-	No	M D	1917	
St Mark's Hospital	Gen	Church	100	121	13	No	R N	1882
Salt Lake General Hosp	Gen	County	200	130	10	Yes	M D	1919
Shriners Hosp for Crippled Children (U S Wards in St Mark's Ho p)								
Spanish Fork 3 72—Utah Co								
Hughes Memorial Hospital	Gen	Indiv	12	4	3	No	M D	1922
Vernal 1 744—Utah Co								
Vernal Hospital	Gen	Indiv	12	-	3	No	Lay	1911
Related Institutions								
Brigham 7 077—Box Elder Co								
Pearce Private Hospital	Gen	Indiv	7	3	5	No	Lay	1920
Fillmore 1 374—Millard Co								
Fillmore Hospital	Gen	Indiv	6	1	1	No	M D	1922
Garland 8 4—Box Elder Co								
Beaver River Valley Hospital	Gen	Church	6	2	1	No	M D	1922
Hiawatha 939—Carbon Co								
U S Fuel Company Hosp	Indus	Indus	6	1	1	Yes	M D	1917
Murray 7 172—Salt Lake Co								
Cottonwood Water Hosp	Mater	Church	17	7	12	No	Lay	1904
Murray (Mine) Hospital	Gen	Indiv	10	1	2	Yes	M D	1925
Ogden 40 212—Weber Co								
State Industrial School	Inst l	State	10	3	No	Lay	1886	
Utah School for the Deaf and Blind	Inst l	State	21	6	No	Lay	1884	
Richfield 607—Sevier Co								
Richfield General Hospital	Gen	Part	6	1	No	R N	1916	
Roy 961—Weber Co								
Weber County Infirmary	Inst l	County	16	10	No	Lay	1922	
Summary for Utah								
Hospitals and sanatoriums	Number	Beds	Patients	Basinets				
Related institutions	26	2 570	1 000	212				
	10	110	41	6				
Totals	36	2 683	1 041	218				
Refused registration	0							

VERMONT

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Supt M D R N Layman	Year Est
Barre 11 307—Washington Co								
Barre City Hospital	Gen	Indep	40	35	10	No	R N	1907
Washington County Hosp	Gen	County	47	41	No	M D	1921	
Bellows Falls 3 930—Windham Co								
Rockingham Gen Hosp	Gen	Indep	36	23	7	Yes	R N	1900
Bennington 7 190—Bennington Co								
Henry W Putnam Memorial Hospital	Gen	Indep	88	40	20	No	R N	1912
Brandon 2 891—Rutland Co								
Brandon State School	N&M	State	300	232	Yes	M D	1912	
Brattleboro 5 789—Windham Co								
Brattleboro Mem Hosp	Gen	Indep	50	29	5	No	R N	1904
Brattleboro Retreat	N&M	Indep	500	591	Yes	M D	1884	
Burlington 24 789—Chittenden Co								
Bishop De Goesbriand Hospital	Gen	Church	112	84	12	No	R N	1924
Green Mountain Sanat	Gen	Indiv	13	6	Yes	M D	1910	
Lakeview Sanitarium	N&M	Indep	20	16	No	M D	1882	
Mary Fletcher Hospital	Gen	Indep	150	100	15	Yes	M D	1876
Ft Trian Allen 106—Chittenden Co								
Station Hospital	Gen	Army	60	21	1	No	M D	1894
Hardwick 1 667—Caledonia Co								
Hardwick Hospital	Gen	County	12	5	6	No	R N	1907
Middlebury 2 003—Addison Co								
Porter Memorial Hospital	Gen	Indep	46	11	11	No	R N	1920
Montpelier 7 837—Washington Co								
Heaton Hospital	Gen	Indep	70	50	8	No	R N	1890
Newport 5 094—Orleans Co								
Orleans County Memorial Hospital	Gen	Indep	40	22	8	Yes	R N	1901

WISCONSIN—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinsets	Outpatient Dept	Supt M D R N	Year Est
South View Isolation Hospital	Isolation	City	250	112	No	MD	187	
West Side Hospital	Gen	Indep	25	12	5	No	MD	1922
Monroe 5015—Cren Co								
Evangelical Deaconess Hospital	Gen	Church	32	20	12	No	Lay	1917
Green County Asylum	N&M	County	200	105	No	Lay	1875	
Mount Horeb 149—Dane Co								
Buckner Hospital	Gen	Indiv	13	4	6	No	Lay	1922
Neenah 9151—Winnebago Co								
Thed. Clark Mem Hosp	Gen	Indep	5	46	17	No	RN	1910
New London 4661—Waupaca Co								
Borchardt Clinic and Memorial Hospital	Gen	Indiv	18	12	6	No	MD	1925
New London Community Hospital	Gen	Indep	11	9	4	No	RN	1926
New Richmond 2112—St Croix Co								
St Croix County Asylum	N&M	County	160	135	Yes	Lay	1898	
Nagara 2033—Marinette Co								
Nagara Hospital	Indus	Indus	12	5	4	Yes	MD	1900
Oconomowoc 4190—Waukesha Co								
Oconomowoc Health Resort	N&M	Indep	75	60	No	MD	1907	
Summit Hospital	Gen	Indep	40	26	6	No	MD	1898
Oconto 5030—Oconto Co								
Oconto Co & City Hosp	Gen	Indep	20	13	6	No	RN	1920
Oconto Falls 1921—Oconto Co								
Oconto Falls Hospital	Gen	Indep	11	4	4	No	RN	1921
Onalaska 1408—La Crosse Co								
Oak Forest Sanatorium	TB	County	60	48	No	RN	1918	
Oshkosh 40108—Winnebago Co								
Alexian Brothers Hospital	N&M	Church	85	66	No	RN	1879	
Mercy Hospital	Gen	Church	100	112	No	RN	1918	
St. Mary's Hospital	Gen	Church	50	30	25	No	Lay	1891
Park Falls 8036—Price Co								
Park Falls Hospital	Gen	Indiv	20	15	4	No	MD	1912
Peshigo 1570—Marinette Co								
Marinette County Insane Asylum	N&M	County	191	198	No	Lay	1906	
Pewaukee 1067—Waukesha Co								
Oak Sanatorium	TB	County	88	88	Yes	RN	1918	
Platteville 4047—Grant Co								
Andrew Hospital	Gen	Indiv	15	8	4	No	MD	1924
Buck Hospital	Gen	Indiv	10	5	4	No	MD	1914
Wilson Cunningham Hosp	Gen	Indiv	25	12	6	No	MD	1900
Plymouth 8582—Sheboygan Co								
Plymouth Hospital	Gen	Indep	80	17	8	No	RN	1917
Plymouth Knoll Sanatorium	TB	County	80	50	No	RN	1926	
Portage 6308—Columbia Co								
St. Saviors General Hosp	Gen	Church	60	44	8	No	Lay	1917
Prairie du Chien 3943—Crawford Co								
Prairie du Chien Sanatorium and Hospital	Gen	Indep	60	33	6	No	Lay	1902
Frederick 725—Pierce Co								
Dr. Louis Jones Hospital	Gen	Indiv	20	12	4	No	MD	1925
Pureair (Bayfield P O)—Bayfield Co								
Pureair Sanatorium	TB	County	70	67	No	MD	1920	
Racine 6152—Racine Co								
Racine County Asylum	N&M	County	250	225	No	Lay	1890	
St. Luke's Hospital	Gen	Church	125	65	31	No	RN	1895
St. Mary's Hospital	Gen	Church	85	60	24	No	RN	1882
Sunny Rest Sanatorium	TB	County	50	47	No	RN	1915	
Reedsburg 2967—Sauk Co								
Sauk County Asylum	N&M	County	191	177	No	Lay	1873	
Rhinelander 8019—Oneida Co								
St. Mary's Hospital	Gen	Church	65	29	12	No	Lay	1895
Rice Lake 5177—Barron Co								
Lakeside Methodist Hosp	Gen	Church	31	19	5	No	RN	1920
St. Joseph's Hospital	Gen	Church	34	11	4	No	Lay	1917
Richland Center 3632—Richland Co								
Richland County Asylum	N&M	County	142	117	No	Lay	1895	
Richland Hospital	Gen	Church	39	25	9	No	RN	1924
River Falls 2363—Pierce Co								
City Hospital	Gen	City	13	8	4	No	RN	1921
Shawano 4188—Shawano Co								
Shawano County Insane Asylum	N&M	County	184	180	No	Lay	1913	
Sheboygan 89251—Sheboygan Co								
St. Nicholas Hospital	Gen	Church	128	76	27	No	RN	1890
Sheboygan County Asylum	N&M	County	206	205	No	Lay	1882	
Shorewood (Milwaukee P O) 13479—Milwaukee Co								
Shorewood Hospital Sanit	Gen	Indep	50	35	Yes	MD	1904	
Shullsburg 1041—Lafayette Co								
Dr. Ennis Hospital	Gen	Indiv	15	11	2	Yes	RN	1913
South Milwaukee 10706—Milwaukee Co								
South Milwaukee Hospital	Gen	Indiv	14	4	6	No	MD	1904
Sparta 4940—Monroe Co								
Monroe Co Insane Asylum	N&M	County	142	126	No	Lay	1903	
St. Mary's Hospital	Gen	Church	65	45	10	No	Lay	1915
Stanley 1983—Chippewa Co								
Victory Hospital	Gen	Indep	15	8	6	No	RN	1919
Staten 90—Waukesha Co								
Wiconsin State Sanat	TB	State	208	180	No	MD	1907	
Stevens Point, 13623—Portage Co								
River Pines Sanatorium	TB	Indep	50	46	No	MD	1906	
St. Michael's Hospital	Gen	Church	111	47	14	No	Lay	1912
Stoughton 4497—Dane Co								
Stoughton Community Hospital	Gen	City	22	11	9	No	RN	1924
Sturgeon Bay 4083—Door Co								
Friesland Hospital	Gen	Indiv	25	15	2	No	Lay	1915
Leasum Hospital	Gen	Indiv	17	10	5	No	MD	1925
Superior 36113—Douglas Co								
Good Samaritan Hospital	Gen	Church	12	9	8	No	Lay	1919
St. Francis Hospital	Gen	Church	50	14	10	No	Lay	1899
St. Mary's Hospital	Gen	Church	100	72	21	No	Lay	1894

WISCONSIN—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Basinsets	Outpatient Dept	Supt M D R N	Year Est
Tomahawk 2919—Lacoin Co								
Sacred Heart Hospital	Gen	Church	45	18	2	No	R N	1893
Two Rivers 10082—Manitowoc Co								
Two Rivers Municipal Hos	Gen	City	35	25	8	No	R N	1927
Union Grove 765—Racine Co								
Southern Wisconsin Colony and Training School	MenDefState		600	477		No	M D	1919
Verona 450—Dane Co								
Dane County Asylum for Chronic Insane	N&M	County	375	325		No	Lay	1883
Viroqua 2792—Vernon Co								
Vernon County Asylum for the Insane	N&M	County	125	116		No	Lay	1888
Washburn 2238—Bayfield Co								
Washburn Hospital	Gen	Indep	14	5	5	Yes	M D	1922
Watertown 10613—Jefferson Co								
Bethesda Lutheran Home for Labeled and Epileptics	FeMi	Church	300	300		No	Lay	1904
St. Mary's Hospital	Gen	Church	50	32	10	No	R N	1914
Waukeha 1716—Waukesha Co								
The Spa	Rheu	Indep	75	40		No	Lay	1910
U. S. Veterans Hospital	VetBur		250	212		No	M D	1919
Waukesha County Insane Asylum	N&M	County	216	212		No	Lay	1902
Waukesha Municipal Hosp	Gen	City	120	22	12	No	R N	1914
Waukesha Springs Sanit	N&M	Indep	50	40		No	M D	1895
Waupaca 1331—Waupaca Co								
Dr. P. I. Christofferson Ho pital	Gen	Indiv	12	6		No	M D	1921
Waupun 1068—Fond du Lac Co								
Central State Hospital for Insane	N&M	State	125	130		No	M D	1912
Wausau 7378—Marathon Co								
Marathon County Asylum for Chronic Insane	N&M	County	200	200		No	Lay	1894
Mount View Marathon Co Tuberculosis Sanat	TB	County	66	66		Yes	R N	1917
St. Mary's Ho pital	Gen	Church	170	73	18	Yes	Lay	1907
Wausau Memorial Hosp	Gen	Indep	95	60	15	No	R N	1914
Wauwatosa 21194—Milwaukee Co								
Blue Mound Preventorium	TB	County	116	112		Yes	M D	1907
Milwaukee County Asylum for Chronic Insane	N&M	County	1429	1098		No	M D	1880
Milwaukee County General Ho pital	Gen	County	1000	395	65	Yes	M D	1880
Milwaukee County Hospital for Mental Diseases	N&M	County	767	669		Yes	M D	1880
Milwaukee Sanatorium	N&M	Indep	133	128		No	M D	1881
Milwaukee Sanatorium	TB	County	375	375		Yes	M D	1915
West Bend 40—Washington Co								
Washington County Asylum for Chronic Insane	N&M	County	152	148		No	Lay	1899
West De Pere 4500—Brown Co								
Hickory Grove Sanatorium	TB	St & Co	72	47		No	R N	1915
West Salem 1011—La Crosse Co								
La Crosse County Asylum for Insane	N&M	County	250	250		No	Lay	1888
Weyauwega 106—Waupaca Co								
Waupaca County Insane Asylum	N&M	County	155	140		No	Lay	1902
Whitehall 91—Trempealeau Co								
Trempealeau County Insane Asylum	N&M	County	150	150		No	Lay	1900
Whitehall Community Hos pital	Gen	Indep	35	19	4	No	R N	1917
Whitewater 269—Manitowoc Co								
Muple Crest Sanatorium	TB	County	45	42		No	R N	1917
Winnebago 1120—Winnebago Co								
Northern Hospital for the Insane	N&M	State	804	700		No	Lay	1884
Sunny View Sanatorium	TB	County	66	66		No	R N	1911
Winnebago Co Asylum	N&M	County	27	26		No	Lay	1914
Wisconsin Rapids 876—Wood Co								
Riverview Ho pital	Gen	Indep	50	23	8	No	R N	1912
Wyocena 490—Columbia Co								
Columbia County Asylum	N&M	County	210	190		No	Lay	1893
Related Institutions								
Beloit 22711—Rock Co								
Beloit Detention Hospital	I o	City	10	5		No	M D	1906
Dousman 256—Waukesha Co								
Wisconsin Ma onic Home and O F S Hospital	Inst I	Frat	18	1		No	Lay	1904
Ellsworth 1124—Pierce Co								
Ellsworth Hospital	Gen	Indiv	8	5		No	R N	1905
Green Bay 3415—Brown Co								
Orphan and Rescue Home	Inst I	Indep	18	18		No	Lay	1912
Wisconsin State Reformatory Hospital	Inst I	State	24	8		No	Lay	1903
Janesville 2100—Rock Co								
Detention Ho pital	I o	City	8	1		No	Lay	1901
Jefferson 209—Jefferson Co								
St. Cecilia Institute	MenDef	Church	50	10		No	Lay	1904
St. Genevieve 303—Walworth Co								
Crane Farms Sanatorium	Conv	Indus	14	8		No	Lay	1911
Lake Tomahawk 60—Oneida Co								
Lake Tomahawk State Camp for Tuberc	TB	State	4	5		No	Lay	1901
Manchester 240—Grant Co								
Manchester Ho pital	Gen	Part	5	4	2	No	Lay	1901
Codfrey Ho pital								
Madison 500—Dane Co								
East Washington Ho pital	I o	City	20	5		No	Lay	1904

Related Institutions

Beloit 22511—Rock Co								
Beloit Detention Hospital	I o	City	10	5	No	MD	1900	
Douman 256—Waukesha Co								
Wiconsin Ma onic Home and O F S Hospital	Inst1	Frat	18	1	No	Lay	1904	
Ellsworth 1124—Pierce Co								
Ellsworth Hospital	Gen	Indiv	8	5	No	RN	1915	
Green Bay 345—Brown Co								
Orphan and Rescue Home	Inst1	Indep	18	18	No	Lay	1912	
Wilson in State Reformatory Hospital	Inst1	State	71	6	No	Lay	1903	
Janeville 2108—Rock Co								
Detention Ho pital	I o	City	8	1	No	Lay	1911	
Jefferson 209—Jefferson Co								
St. Coletta Institute	MenDefChurch		75	10	No	Lay	1911	
Lake Geneva 303—Walworth Co								
Crane Farms Sanatorium	Conv	Indus	14	8	No	Lay	1911	
Lake Tomahawk 60—Oneida Co								
Lake Tomahawk State Camp for Tuberc Con vinctives	TB	State	4	5	No	Lay	1911	
Lancaster 247—Cranit Co								
Codfrey Ho pital	Gen	Part	8	4	2	No	Lay	1911
Madi on 500—Dane Co								
Eat W hington Ho pital	I o	City	70	6	No	Lay	1911	

WISCONSIN—Continued

Related Institutions	Type of Service	Control	Beds	Average Patients	Bassinets	Outpatient Dept	Supt M D R N Layman	Year Est
Millwaukee 578 249—Millwaukee Co Layton Home	Incur	Church	32	31	No	I	ay	1907
St Camillus Hospital and Invalids Home	Incur	Church	19	19	No	L	ay	1924
Vondovi 1 623—Buffalo Co Vondovi Hospital	Gen	Indiv	6	2	No	M	D	1911
National Home—Milwaukee Co Northwestern Branch National Home for Disabled Volunteer Soldiers	Inst l	Fed	797	7 0	No	M	D	1867
Racine 67 542—Racine Co Lincoln Memorial Hospital for Communicable Dis	Iso	City	51	6 10	No	R	N	1921
Superior 3 114—Douglas Co Isolation Hospital	Iso	City	2	1	No	M	D	1900
Psychedab 1 8—Fond du Lac Co Wisconsin Industrial Home for Women	Inst l	State	15	3 6	No	I	ay	1921
Pomah 3 34—Monroe Co Tomah Indian School Hos	Inst l	Indian	1	1	No	I	ay	1900
Waukesha 17 16—Waukesha Co Wisconsin Industrial School for Boys	Inst l	State	16	3	No	I	ay	1840
Waupun 5 768—Fond du Lac Co Wisconsin State Prison Hos	Inst l	State	121	18	No	M	D	1902
Wausau 23 78—Marathon Co Marathon County Home and Hospital	Inst l	County	4	12	No	I	ay	1894
Wauwatosa 21 194—Milwaukee Co Milwaukee County Home for Children	Inst l	County	60	1	No	I	ay	1898
Salvation Army Rescue Home	Mater	Church	9	4 3	No	I	ay	1893
Wisconsin Veterans Home 117—Waupaca Co Grand Army Home for Veterans	Inst l	State	117	11	Yes	I	ay	1887
Summary for Wisconsin								
Hospitals and sanatoriums	Number	Beds	Average Patients	Bassinets				
Related Institutions	197	2,144	20 419	1,490				
Totals	221	27,333	21 186	1,541				
Refused registration	12	33		10				

WYOMING

Hospitals and Sanatoriums	Type of Service	Control	Beds	Average Patients	Bassinets	Outpatient Dept	Supt M D R N Layman	Year Est	
Basin 904—Big Horn Co Basin Hospital	Gen	Indep	1		2	No	R	1908	
Wyoming Tuberc Sanat	TB	State	0	15	No	M	D	1926	
Burns 216—Laramie Co Burns Hospital	Gen	Part	1		Yes	M	D	1922	
Casper 16 619—Natrona Co Memorial Hospital of Natrona County	Gen	County	100	29	1	Yes	R	1911	
Cheyenne 17 061—Laramie Co Memorial Hospital of Laramie County	Gen	County	13	18	No	R	N	1921	
Douglas 1 917—Converse Co Douglas Hospital	Gen	Indiv	15	9	4	No	R	N	1903
Lynston 3 05—Uinta Co Wyoming State Hospital	N&M	State	400	441	No	M	D	1885	
Pt Warren 22—Laramie Co Station Hospital	Gen	Army	100	1	Yes	M	D	1867	
Hot Washakie 62—Fremont Co Shoshone Indian Hospital	Gen	Indian	3	14	1	Yes	I	ay	1919
Gebo 984—Hot Springs Co Gebo Hospital	Gen	Indiv	13	6	2	Yes	R	N	1917
Hanna 1 483—Carbon Co Hanna Hospital	Indus	Indus	20	5	Yes	M	D	1910	
Jackson 33—Teton Co St John's Hospital	Gen	Church	2	5	2	Yes	R	N	1916
Kemmerer 1 884—Lincoln Co Lincoln Co Miners Hosp	Gen	Indep	30	12	5	Yes	R	N	1912
Jander 1 896—Fremont Co Bl hope Randall Hospital	Gen	Church	20	11	6	No	R	N	1912
Wyoming State Training School	MenDef	State	212	203	No	L	ay	1912	
Midwest 2 122—Natrona Co Midwest Hospital	Indus	Indus	2	11	4	No	M	D	1922
Pow 11 16—Park Co Whitlock Hospital	Gen	Indiv	25	7	4	No	M	D	1917
Rock Springs 8 440—Sweetwater Co Wyoming General Hosp	Gen	State	84	50	8	Yes	R	N	1902
Sheridan 8 76—Sheridan Co Sheridan Co Men Hosp	Gen	County	60	40	12	No	R	N	1903
L S Veter Hosp No 85	N&M	VetBur	4381	442	No	M	D	1922	
Shoshoni 263—Fremont Co Dr Jewell's Hosp	Gen	Indiv	11	4	No	M	D	1908	
Thermopolis 2 129—Hot Springs Co Hotwell Ho pital	Gen	Indep	6	10	10	Yes	L	ay	1917
Pierce Rocky Mountain Clinic Ho pital	Gen	Indiv	3	17	10	No	M	D	1920
Washakie Sanat & Clinic	Gen	Indiv	24	11	Yes	M	D	1917	
Wheatland 1 997—Platte Co Wheatland General Hosp	Gen	Indep	4	48	Yes	R	N	1908	
Worland 1 471—Washakie Co Dr Crav's Hospital	Gen	Indiv	11	4	No	M	D	1912	

WYOMING—Continued

Related Institutions	Type of Service	Control	Beds	Average Patients	Bassinets	Outpatient Dept	Supt M D R N Layman	Year Est
Cheyenne 17 061—Laramie Co Laramie County Isolation Hospital	Iso	County	12	10	No	M D	1916	
Greybull 1 806—Big Horn Co St Luke's Hospital	Gen	Indiv	6	3	2	No R N	1919	
Hot Springs 1 807—Big Horn Co Hot Springs Hospital	Gen	Indiv	6	4	2	No M D	1924	
Thermopolis 2 129—Hot Springs Co Carter General Hospital	Gen	Indiv	10	6	1	No R N	1916	
McGannon Sanitarium	Gen	Indiv	20	12	No	I ay	1901	
Summary for Wyoming								
	Number		Beds		Patients		Bassinets	
Hospitals and sanatoriums	26		2 060		1 492		115	
Related Institutions	5		64		23		3	
Totals	31		2 114		1 517		125	
Refused registration	3		112				10	

ALASKA

Hospitals Sanatoriums and Related Institutions	Type of Service	Control	Beds	Average Patients	Bassinets	Outpatient Dept	Supt M D R N Layman	Year Est
Aklavik 150 U S Hosp for Natives	Gen	Fed	14	4	1	No	M D	1917
Anchorage 2284 Anchorage Base Hospital	Indus	Fed	11	21	6	No	I ay	1916
Cordova 977 Cordova General Hospital	Gen	Indiv	20	8		Yes	M D	1916
Fairbanks 2042 St Joseph's Hospital	Gen	Church	40	15		No	Lay	1903
Goddard 0 Sitka Hot Springs Hospital and Health Resort	Gen	Indiv	26	10		No	M D	
Haines 244 Station Hospital	Gen	Army	1	4		Yes	M D	1907
Juneau 4016 St Ann's Hospital	Gen	Church	75	72	8	Yes	Lay	1889
U S Hosp for Natives	Gen	Fed	33	16	3	Yes	M D	
Ketchikan 2780 Ketchikan General Hosp	Gen	Church	60	30	7	No	Lay	1922
Latouche 405 Latouche Hospital	Gen	Indus	8	3		Yes	M D	
Nome 1213 Maynard Columbus Hosp	Gen	Church	20	15		Yes	R N	1916
Noorvik via Kotzebue 251 Government Hospital for Natives (Tschukots)	Gen	Fed	15	4	2	Yes		1920
Petersburg 870 Petersburg General Hosp	Gen	City	10	5	3	No	R N	1920
Point Barrow 94 Presbyterian Hospital	Gen	Church	8	6	4	Yes	M D	1921
Sitka 1043 Alaska Pioneers Home	Inst l	Territ	2	18		Yes	I ay	1913
Tanana 213 U S Government Hospital	Gen	Fed	26	13		Yes	M D	1926
Wrangell 916 Wrangell General Hospital	Gen	Church	20	9	4	No	I N	1916

Summary for Alaska								
Hospitals sanatoriums and related institutions	Number	Beds	Average Patients	Bassinets				
	17	446	208	87				

CANAL ZONE

Hospitals Sanatoriums and Related Institutions	Type of Service	Control	Beds	Average Patients	Bassinets	Outpatient Dept	Supt M D R N Layman	Year Est
Ancon 2 000 Gorras Hospital*	Gen	Fed	800	50	24	Yes	Lay	1881
Balboa 2 700 Palo Seco Leprosy Colony	Leprosy	Fed	100	99	No	M D	1907	
Station Hospital	Gen	Army	22	17	Yes	M D	1911	
Corozal 882 Corozal Hospital	N & M	Fed	500	543	No	M D	1915	
Station Hospital	Gen	Army	50	30	Yes	M D	1915	
Cristobal 4 000 Colon Hospital	Gen	Fed	104	62	16	Yes	M D	1904
Ft Randolph 98 Station Hospital	Gen	Army	12	6	Yes	M D	1916	
Ft Sherman 166 Station Hospital	Gen	Army	27	10	Yes	M D	1914	
France Field 116 Station Hospital	Gen	Army	14	8	Yes	M D	1919	
Gatun 2 000 Station Hospital	Gen	Army	60	40	Yes	M D	1916	
Summary for Canal Zone								
Hospitals sanatoriums and related Institutions	Number	Beds	Patients	Bassinets				
	10	1 794	130	40				

Key to symbols and abbreviations is on page 1023

GUAM

Hospitals Sanatoriums and Related Institutions	Type of Service	Control	Beds	Average Patients	Outpatient Dept	M D R N	Year End
Agaña, — Susana Hospital for Natives of Guam (Included in U S Naval Hospital	Gen	Navy	90	00	0	Naval Hosp No MD 100.	
Summary for Guam	Number	Beds	Patients	Basinets			
Hospitals sanatoriums and related institutions	1	00	00				

HAWAII

Hospitals, Sanatoriums and Related Institutions	Type of Service	Control	Beds	Average Patients	Bassinets	Outpatient Dept	Supt M D	R N Layman	Year Est
Aleia, 3 071—Honolulu Co Alea Hospital	Indus	Indus	30	2	1	Yes			1895
Elele 312—Kauai Co									
McBryde Sugar Co Hosp	Indus	Indus	37	29	2	Yes	M D		1899
Hilo 19 468—Hawaii Co									
Hilo Memorial Hospital	Gen TB	County Territ	94	51	6	No	R N		1894
Puamale Home for Tuberc			100	77		No	R N		1912
Honokaa 1 069—Hawaii Co									
Honokaa Sugar Company and Pacific Sugar Mill Plantation Hospital	Indus	Indus	25	10		Yes	M D		
Honolulu 137 552—Honolulu Co									
Japanese Hospital	Gen	Indep	120	71		No	Lay		1900
Kalihi Receiving Station	Leprosy	Territ	200	141		Yes	Lay		1889
Kapiolani Maternity Home and Gynecology Hospital	Mater	Indep	50	30		No	R N		1875
Kaulaolani Children's Hospital	Chil	Indep	60	75		Yes	Lay		1909
Leahi Home	TB	Indep	440	345		No	Lay		901
Queens Hospital*	Gen	Indep	258	180	18	No	Lay		1903
St Francis Hospital	Gen	Church	45	34	10	No	R N		1921
Shriners Hospital for Crippled Children's Hospital)	Crippled Children		(uses wards in Kaulaolani)						
Tripler General Hospital	Gen	Army	300	120	14	Yes	M L		1912
Kahuku 1 501—Honolulu Co									
Kahuku Plantation Company's Hospital	Indus	Indus	25	15		Yes	M D		1912
Kalaupapa—Kalaupapa Co									
Kalaupapa Leper Settlement	Leprosy	Territ	500	500		Yes	Lay		1866
Kaneohe 112—Honolulu Co									
The Territorial Hospital	A & M	Territ	524	578		No	M D		1864
Kealahou 350—Hawaii Co									
Kona County Hospital	Gen	County	30	15		No	R N		
Keala 100—Kauai Co									
Keala Hospital	Indus	Indus	24	10	1	Yes	M D		1890
Samuel Mahelona Memorial Hospital	TB	County	105	101		No	Lay		1917
Kilauea 1 237—Kauai Co									
Kilauea Sugar Plantation Hospital	Indus	Indus	20	20		Yes	M D		1887
Kohala 720—Hawaii Co									
Kohala Hospital	Gen	County	34	14	2	No	R N		
Koloa 1 644—Kauai Co									
Koloa Sugar Company's Hospital	Indus	Indus	31	16	3	Yes	M D		1911
Kula 25—Maui Co									
Maui County Farm and Sanitarium	TB	County	200	188	2	Yes	M D		1910
Lahaina 2 730—Maui Co									
Pioneer Mill Company's Hospital	Indus	Indus	55	43	9	Yes	M D		1908
Lihue 2 309—Kauai Co									
Lihue Hospital	Indus	Indus	45	24	6	Yes	M D		1894
Makawell—Kauai Co									
Makawell Hospital	Indus	Indus	25	12	2	No	M D		
Olaa 597—Hawaii Co									
Olaa Hospital	Indus	Indus	30	11		Yes	M D		
Ookala 526—Hawaii Co									
Ookala Hospital	Indus	Indus	8	5		No	M D		
Panauhau 536—Hawaii Co									
Panauhau Plantation Co Ltd Hospital	Indus	Indus	15	7		Yes	Lay		1922
Panaloa 1 233—Hawaii Co									
Panaloa Hospital	Indus	Indus	12	8		Yes	M D		1892
Pahala 290—Hawaii Co									
Pahala Hospital	Indus	Indus	25	16	2	Yes	M D		1915
Pearl City 1 011—Honolulu Co									
Waimano Home for Feeble minded Persons	Fe M	Territ	190	190		No	M D		1920
Pearl Harbor 200—Oahu Co									
U S Naval Hospital	Gen	Navy	179	59		No	M D		1917
Pepeekeo 570—Hawaii Co									
Pepeekeo Hospital	Indus	Indus	33	16		No	M D		
Pukoo 50—Maui Co									

HAWAII—Continued

Hospitals and Related Institutions	Type of Service	Control	Beds	Average Patients	Basinets	Outpatient Dept	Sept	R N	Year
Waiohinu 100—Hawaii Co	Gen	County	20	10	2	Yes	R	N	1923
Kaunahoe Memorial Hosp									
Waipahu 5874—Honolulu Co	Indus	Indus	30	40	6	Yes	M	D	1920
Onahu Sugar Company Ltd Hospital									
Summary for Hawaii									
Hospital	Number	Bed		Patients	Basinets				
related institutions	41	4563		3414	101				

PHILIPPINE ISLANDS

Hospitals and Related Institutions	Type of Service	Control	Beds	Average Patients	Basements	Outpatient Dept	Supt. M. D.	R. N. Physician	Year Est.
Bacolod 1930—Occidental Negros Co									
Maternity and Childrens Hosp of the Las Amigas de la Infancia	Mater	Indep	17	4	18	Yes	R N		1923
Occidental Negros Provincial Hospital	Gen	Gov t	35	2	3	Yes	M D		1926
Baguio 5464—Benguet Co	Gen	Gov t	67	3		Yes	M D		1901
Baguio Hospital Station Hospital	Gen	Army	30	1		No	M D		1907
Barili 33481									
Hacienda de San Jose	Incur	Gov t	25	-		No	M D		1916
Batangas 41187—Batangas Co	Gen	Gov t	30	21		Yes	M D		1925
Batangas Provincial Hospital	Gen	Gov t	20	10		Yes	M D		1907
Bayombong 58—Nueva Vizcaya Co	Gen	Gov t	20	10		Yes	M D		1907
Bontoc 609—Bontoc Co	Gen	Gov t	23	2		Yes	M D		1901
Bontoc Hospital	Gen	Gov t	23	2		Yes	M D		1901
Butuan 9770—Agusan Co	Gen	Gov t	14	13		Yes	M D		1912
Butuan Public Hospital	Gen	Gov t	14	13		Yes	M D		1912
Cadiz 2170—Occidental Negros Co									
Negro Philippine Lumber Company Hospital	Indus	Indus	12	5		Yes	M D		
Cagayan 2433—Misamis Co	Gen	Gov t	42	13		Yes	M D		1917
Misamis Provincial Hospital	Gen	Church	50	13	12	Yes	M D		1912
Capiz 21936—Capiz Co	Gen	Church	46	21	4	Yes	M D		1900
Emmanuel Hospital	Gen	Church	46	21	4	Yes	M D		1900
Cavite 22163—Cavite Co	Gen	Army	130	43	10	Yes	M D		1895
Station Hospital	Gen	Navy	130	104		Yes	M D		1905
Cebu 63300—Cebu Co									
Cebu Maternity House	Mater	Indep	11	11	15	Yes	M D		1912
Chong Hou Chinese Hosp	Gen	Indep	22	1		No			1910
Eastern Visayas Treatment Station	Leprosy	Gov t	400	225		Yes	M D		1906
Southern Island Hospital	Gen	Fed	34	6		Yes	M D		1911
Cotabato 410—Cotabato Co									
Cotabato Public Hospital	Gen	Gov t	20	2		Yes	M D		1917
Culion—Palawan Co									
Culion Leprosy Colony	Gen	Gov t	10	44	12	Yes	M D		1903
Culion Leprosy Colony	Leprosy	Gov t	100	100		Yes	M D		1906
Cuyo 1468—Palawan Co									
Cuyo Hospital	Gen	Gov t	90	-		Yes	M D		1916
Dagupan 27612—Pangasinan Co									
Pangasinan Provincial Hospital	Gen	Gov t	50	1		Yes	M D		1923
Dansalan 5988—Lanao Co									
Lanao Public Hospital	Gen	Gov t	40	20		Yes			1914
Dapitan 12569—Zamboanga Co									
Rizal Memorial Hospital	Gen	Gov t	30	7		Yes	R N		1916
Davao 10346—Davao Co									
Davao Mission Hospital	Gen	Church	0	40		Yes	M D		1911
Davao Public Hospital	Gen	Gov t	8	41		Yes	M D		1918
Dipolog 13982—Zamboanga Co									
Dipolog Emergency Hosp	Gen	Gov t	12	1		Yes	M D		1917
Dumaguete 16227—Oriental Negros Co									
Dumaguete Mission Hosp	Gen	Church	0	15		Yes	M D		1900
St. Stotenberg—Pampanga Co									
Station Hospital	Gen	Army	70		4	Yes	M D		1900
Guadalupe—Rizal Co									
Station Hospital	Gen	Army	230			Yes	M D		1911
Iloilo 49114—Iloilo Co									
Iloilo Emergency Hospital	Gen	Gov t	40			Yes	M D		
St. Paul's Mission Hospital	Gen	Church	100			No			
Union Mission Hospital	Gen	Church	61	4	6	Yes	M D		1905
Iolo 5796—Sulu Co									
Sulu Public Hospital	Gen	Gov t	40	1		Yes	M D		1914
Kiangnan 26—Ifugao Co									
Kiangnan Hospital	Gen	Gov t	1	1		Yes			19

Key to symbols and abbreviations is on page 1023

PORTO RICO—Continued

	Hospitals Sanatoriums and Related Institutions	Type of Service	Control	Beds	Average Patient	Bassin	Output	Dipt	Supt	MD	Year
	Gurabo 7465—Humacao Co	Gen	C & Co	12	8	1	Yes	MD	1906		
	Hospital Municipal de Gurabo	Gen	Church	50	20	10	Yes	MD	1914		
	Humacao 7937—Humacao Co	Gen	City	20	10		Yes	Lay	1910		
	Ryder Memorial Ho pital	Gen	City	20	10		Yes	MD	1907		
	Juneo 5297—Guayama Co	Gen	Part	10	6	2	Yes	MD	1913		
	Hospital Municipal	Gen	C & Co	23	21	1	Yes	MD	1913		
	Lares 3049—Agudilla Co	Gen	C & Co	10	8		Yes	MD	1913		
	Clinica San Jo e	Gen	City	10	8		Yes	MD	1903		
	Hosp Municipal de Jares Co	Gen	City	20	20		Yes	MD	1903		
	Las Piedras 130—Humacao Co	Gen	City	20	9		No	MD	1897		
	Las Piedras Municipal Hos pital	Gen	City	20	9		No	MD	1897		
	Manati 7449—San Juan Co	Gen	City	20	9		No	MD	1897		
	Hospital Municipal Manati	Gen	City	20	9		No	MD	1897		
	Maunabo 1,117—Guayama Co	Gen	City	20	9		No	MD	1897		
	Ho pital San Jo e	Gen	City	20	9		No	MD	1897		
	Mayaguez 37060—Mayaguez Co	Gen	Indiv	20	7		No	Lay	1905		
	Mayaguez and Western	Gen	Indiv	20	7		Yes	Lay	1906		
	Mayaguez Sanatorium	Gen	Indiv	20	7		Yes	R N	1919		
	Mayaguez 4057—Humacao Co	Gen	City	10	6		Yes	R N	1919		
	Agudilla 4057—Humacao Co	Gen	City	10	6		Yes	R N	1919		
	Hospital Municipal de Agudilla	Gen	City	10	6		Yes	R N	1919		
	Ponce 33470—Once Co	Gen	City	10	6		Yes	R N	1919		
	St Luke's Memorial Hosp	Gen	City	10	6		Yes	R N	1919		
	Santo Vello de Duinas Hos pital	Gen	Church	110	60		Yes	R N	1883		
	Tricocoe Municipal Hosp	Gen	City	100	70		Yes	R N	1883		
	Quebradillas 177—Agudilla	Gen	City	100	70		Yes	R N	1883		
	Hospital Municipal de Que bradillas	Gen	City	100	70		Yes	R N	1883		
	Rio Piedras 1340—San Juan Co	Gen	City	100	70		Yes	R N	1883		
	Psychiatric Hospital of Puerto Rico	Gen	Gov t	1,000	800		Yes	R N	1883		
	Sanatorio de la Sociedad Espanola de Auxilio Mutuo	Gen	Gov t	1,000	800		Yes	R N	1883		
	Beneficencia de Puerto Rico	Gen	Gov t	1,000	800		Yes	R N	1883		
	Salinas 2002—Guayama Co	Gen	City	60	20	6	Yes	R N	1903		
	Hospital de Salinas	Gen	City	60	20	6	Yes	R N	1903		
	San Juan 114715—San Juan Co	Gen	Gov t	33	20	20	No	MD	1900		
	Hospital de la Penitenciaría	Gen	Gov t	33	20	20	No	MD	1900		
	Hospital de Maternidad y Niños	Gen	City	106	70		Yes	MD	1917		
	Hospital Municipal	Gen	City	106	70		Yes	MD	1917		
	Insular Ieper Colony	Gen	City	106	70		Yes	MD	1917		
	Porto Rico Sanatorium	Gen	City	106	70		Yes	MD	1917		
	Post Hospital	Gen	City	106	70		Yes	MD	1917		
	Presbyterian Hospital	Gen	City	106	70		Yes	MD	1917		
	Quarantine Hospital	Gen	City	106	70		Yes	MD	1917		
	University Hosp of the Sch of Tropical Medicine	Gen	City	106	70		Yes	MD	1917		
	Santurce—San Juan Co	Gen	City	106	70		Yes	MD	1917		
	Santa Rosa Clinica	Gen	City	106	70		Yes	MD	1917		
	Utando 4755—Arebibo Co	Gen	City	26	10	2	Yes	R N	1922		
	Hosp Municipal Catalina	Gen	City	26	10	2	Yes	R N	1922		
	& Figueras In Memorial	Gen	City	26	10	2	Yes	R N	1922		
	Vega Baja 474—San Juan Co	Gen	City	26	10	2	Yes	R N	1922		
	Hospital de la Penitenciaría	Gen	City	26	10	2	Yes	R N	1922		
	Hospital de Maternidad y Niños	Gen	City	26	10	2	Yes	R N	1922		
	Hospital Municipal	Gen	City	26	10	2	Yes	R N	1922		
	Insular Ieper Colony	Gen	City	26	10	2	Yes	R N	1922		
	Porto Rico Sanatorium	Gen	City	26	10	2	Yes	R N	1922		
	Post Hospital	Gen	City	26	10	2	Yes	R N	1922		
	Presbyterian Hospital	Gen	City	26	10	2	Yes	R N	1922		
	Quarantine Hospital	Gen	City	26	10	2	Yes	R N	1922		
	University Hosp of the Sch of Tropical Medicine	Gen	City	26	10	2	Yes	R N	1922		
	Santurce—San Juan Co	Gen	City	26	10	2	Yes	R N	1922		
	Santa Rosa Clinica	Gen	City	26	10	2	Yes	R N	1922		
	Utando 4755—Arebibo Co	Gen	City	26	10	2	Yes	R N	1922		
	Hosp Municipal Catalina	Gen	City	26	10	2	Yes	R N	1922		
	& Figueras In Memorial	Gen	City	26	10	2	Yes	R N	1922		
	Vega Baja 474—San Juan Co	Gen	City	26	10	2	Yes	R N	1922		
	Hospital de la Penitenciaría	Gen	City	26	10	2	Yes	R N	1922		
	Hospital de Maternidad y Niños	Gen	City	26	10	2	Yes	R N	1922		
	Hospital Municipal	Gen	City	26	10	2	Yes	R N	1922		
	Insular Ieper Colony	Gen	City	26	10	2	Yes	R N	1922		
	Porto Rico Sanatorium	Gen	City	26	10	2	Yes	R N	1922		
	Post Hospital	Gen	City	26	10	2	Yes	R N	1922		
	Presbyterian Hospital	Gen	City	26	10	2	Yes	R N	1922		
	Quarantine Hospital	Gen	City	26	10	2	Yes	R N	1922		
	University Hosp of the Sch of Tropical Medicine	Gen	City	26	10	2	Yes	R N	1922		
	Santurce—San Juan Co	Gen	City	26	10	2	Yes	R N	1922		
	Santa Rosa Clinica	Gen	City	26	10	2	Yes	R N	1922		
	Utando 4755—Arebibo Co	Gen	City	26	10	2	Yes	R N	1922		
	Hosp Municipal Catalina	Gen	City	26	10	2	Yes	R N	1922		
	& Figueras In Memorial	Gen	City	26	10	2	Yes	R N	1922		
	Vega Baja 474—San Juan Co	Gen	City	26	10	2	Yes	R N	1922		
	Hospital de la Penitenciaría	Gen	City	26	10	2	Yes	R N	1922		
	Hospital de Maternidad y Niños	Gen	City	26	10	2	Yes	R N	1922		
	Hospital Municipal	Gen	City	26	10	2	Yes	R N	1922		
	Insular Ieper Colony	Gen	City	26	10	2	Yes	R N	1922		
	Porto Rico Sanatorium	Gen	City	26	10	2	Yes	R N	1922		
	Post Hospital	Gen	City	26	10	2	Yes	R N	1922		
	Presbyterian Hospital	Gen	City	26	10	2	Yes	R N	1922		
	Quarantine Hospital	Gen	City	26	10	2	Yes	R N	1922		
	University Hosp of the Sch of Tropical Medicine	Gen	City	26	10	2	Yes	R N	1922		
	Santurce—San Juan Co	Gen	City	26	10	2	Yes	R N	1922		
	Santa Rosa Clinica	Gen	City	26	10	2	Yes	R N	1922		
	Utando 4755—Arebibo Co	Gen	City	26	10	2	Yes	R N	1922		
	Hosp Municipal Catalina	Gen	City	26	10	2	Yes	R N	1922		
	& Figueras In Memorial	Gen	City	26	10	2	Yes	R N	1922		
	Vega Baja 474—San Juan Co	Gen	City	26	10	2	Yes	R N	1922		
	Hospital de la Penitenciaría	Gen	City	26	10	2	Yes	R N	1922		
	Hospital de Maternidad y Niños	Gen	City	26	10	2	Yes	R N	1922		
	Hospital Municipal	Gen	City	26	10	2	Yes	R N	1922		
	Insular Ieper Colony	Gen	City	26	10	2	Yes	R N	1922		
	Porto Rico Sanatorium	Gen	City	26	10	2	Yes	R N	1922		
	Post Hospital	Gen	City	26	10	2	Yes	R N	1922		
	Presbyterian Hospital	Gen	City	26	10	2	Yes	R N	1922		
	Quarantine Hospital	Gen	City	26	10	2	Yes	R N	1922		
	University Hosp of the Sch of Tropical Medicine	Gen	City	26	10	2	Yes	R N	1922		
	Santurce—San Juan Co	Gen	City	26	10	2	Yes	R N	1922		
	Santa Rosa Clinica	Gen	City	26	10	2	Yes	R N	1922		
	Utando 4755—Arebibo Co	Gen	City	26	10	2	Yes	R N	1922		
	Hosp Municipal Catalina	Gen	City	26	10	2	Yes	R N	1922		
	& Figueras In Memorial	Gen	City	26	10	2	Yes	R N	1922		
	Vega Baja 474—San Juan Co	Gen	City	26	10	2	Yes	R N	1922		
	Hospital de la Penitenciaría	Gen	City	26	10	2	Yes	R N	1922		
	Hospital de Maternidad y Niños	Gen	City	26	10	2	Yes	R N	1922		
	Hospital Municipal	Gen	City	26	10	2	Yes	R N	1922		
	Insular Ieper Colony	Gen	City	26	10	2	Yes	R N	1922		
	Porto Rico Sanatorium	Gen	City	26	10	2	Yes	R N	1922		
	Post Hospital	Gen	City	26	10	2	Yes	R N	1922		
	Presbyterian Hospital	Gen	City	26	10	2	Yes	R N	1922		
	Quarantine Hospital	Gen	City	26	10	2	Yes	R N	1922		
	University Hosp of the Sch of Tropical Medicine	Gen	City	26	10	2	Yes	R N	1922		
	Santurce—San Juan Co	Gen	City	26	10	2	Yes	R N	1922		
	Santa Rosa Clinica	Gen	City	26	10	2	Yes	R N	1922		
	Utando 4755—Arebibo Co	Gen	City	26	10	2	Yes	R N	1922		
	Hosp Municipal Catalina	Gen	City	26	10	2	Yes	R N	1922		
	& Figueras In Memorial	Gen	City	26	10	2	Yes	R N	1922		
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	Santa Rosa Clinica	Gen	City	26	10	2	Yes	R N	1922		
	Utando 4755—Arebibo Co	Gen	City	26	10	2	Yes	R N	1922		
	Hosp Municipal Catalina	Gen	City	26	10	2	Yes	R N	1922		
	& Figueras In Memorial	Gen	City	26	10	2	Yes	R N	1922		
	Vega Baja 474—San Juan Co	Gen	City	26	10						

VIRGIN ISLANDS

Hospitals Sanatoriums and Related Institutions	Type of Service	Control	Beds	Average Patients	Baths	Outpatient Dept.	Sundays Lay	M.D.	Yards
St Thomas 7747—St Thomas Island Hospital	Civilian	City	106	64	12	No	Lay M.D.	1743	1917
Municipal Hospital U S Naval Hospital	Civilian Gen	Navy	22						
Summary for Virgin Islands	Number		Beds			Patients		Bathrooms	
Hospitals sanatoriums and related institutions	c		123			64		12	

Hosp. Alameda 30 Gen Indiv 30 Yes 102
 Lapey 583—Guayama Co 34 30 Yes 102
 Clinica Dr Villeneuve 34 30 Yes 102
 Cajardo 732—Humacao Co 34 30 Yes 102
 Luis Manuel Cintron Hosp 34 30 Yes 102

Key to symbols and abbreviations is on page 102

NOTE—The foregoing list contains the names of 6,719 hospitals admitted to the Hospital Register of the American Medical Association. It omits the names of 540 institutions which after investigation, were not accepted. Hospitals approved for internship are marked with a five-point star (*) those approved for residencies in specialties, or advanced internship, with a plus sign (+). Copies of the essentials or standards, for the (1) registration of hospitals, (2) approval for internship, and (3) approval for residencies in specialties, as well as other information about the hospital work of the American Medical Association, can be obtained by writing to the Council on Medical Education and Hospitals of the American Medical Association 535 North Dearborn Street Chicago. Copies of the hospital data and the list pages 991 to 1088, in special binding, are available at the price of 50 cents per copy.

Schools of nursing accredited by their respective state boards are marked with a black dot (•). Information regarding the accrediting of those schools is supplied by state boards of nurse examiners at the capitals of the respective states. Great care has been taken to make the material in this issue accurate. Corrections will be welcomed.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, MARCH 28, 1931

THE INCREASING IMPORTANCE OF HOSPITALS

The tenth annual compilation of statistics regarding hospital service in the United States, presented this week in THE JOURNAL, brings fresh interest to a consideration of the magnitude of hospital service. Not long ago, hospital procedures were the business only of the few who worked within their walls. The change to modern methods has been so sweeping as to seem inevitable. A comparison of hospital service of ten or twenty years ago with that of today arouses pride in the mighty forces that have brought about such changes.

HOSPITALS AND MEDICAL EDUCATION

The service of hospitals in the teaching of medicine has become a matter of primary importance. A modern medical school can hardly be conceived of apart from hospitals. There are in the United States 76 acceptable medical schools, but there are 316 teaching hospitals. These teaching hospitals, with a total bed capacity of 135,548, are affiliated with the 76 medical schools for teaching purposes and make the high quality of the clinical service in these schools possible.

But such a statement leaves more than half of the story untold. After the completion of four years of study in the medical schools, 664 approved hospitals, with a total bed capacity of 201,974, wait to receive the army of medical students, with an offer of 5,584 internships for their practical training in the care of the sick. And to those who, now trained in general medicine, desire to pursue some special branch of medical study, another group of 349 hospitals, with a total bed capacity of 218,495, offer 2,069 approved residencies in the various specialties.

There is still another chapter to the story that cannot be told in figures. Adequate statistics are not available regarding the large number of hospitals offering postgraduate courses—courses designed to keep efficient the well trained army of practitioners whose contacts with medical schools are now matters more of past than of current history. The clinics held

singly rather than in courses constitute another unknown but important factor in this phase of hospital service.

INCREASING USE OF HOSPITALS BY PHYSICIANS

The practice of medicine also is being transferred to hospitals in a continuously increasing degree. In 1909 there were in the United States 4,359 reasonably acceptable hospitals, in 1930 there were 6,719, a numerical increase of 2,360, or 54.1 per cent. But the bed capacity of these hospitals rose during the same period from 421,065 to 955,869, a capacity increase of 534,804, or 127 per cent.

Approximately two thirds of the active physicians of the United States are now connected with hospitals. In 1929 there were 152,503 licensed physicians, about 10,000 of whom were not in practice. Of the 142,500 who were in practice, 98,491 were connected with hospitals as staff members, superintendents, residents and interns. The physicians of ten or more years ago were not so connected to any such extent. Indeed, the increased use of hospitals has proceeded with and has been largely due to the increase in connection of physicians with the hospitals. If the present trend continues, the number of active physicians not connected with hospitals will be infinitesimal.

The greatest number of those not yet participating in hospital practice are among the general practitioners. Hospital connection has become a practical necessity to the specialist and has increased with the growth of specialization. In 1929 the numbers of practitioners in the various specialties were

Internists	3,378	Obstetricians & gynecologists	6,108
Surgeons	12,939	Orthopedists	810
Neuro-psychiatrists	1,973	Ophthalmologists	1,311
Radiologists	1,653	Otorhinolaryngologists	6,505
Dermatologists	890	Specialists in tuberculosis	983
Pathologists	672	Urologists	2,249
Pediatricians	3,503	Other specialists	1,972

These practitioners make the hospitals what they are and in turn depend on them for their economic and professional lives. Every specialty therefore has a claim on these hospitals—a logical and undeniable right to a voice in the determination of hospital plans and procedures. The interests of no one specialty are paramount, the solution of hospital problems is the common task of all.

The best judge of hospital service in any special field is obviously the specialist in that field. Who could help more to develop a hospital's facilities for obstetric practice than a properly qualified obstetrician? Who is a more proper person for planning a first class roentgen-ray department than the roentgenologist? To whom can one look for the highest degree of efficiency in the treatment of nervous and mental disorders if not to the psychiatrist?

FEDERAL AND STATE HOSPITALS

Federal and state governments are entering into competition with private agencies in the hospital field.

to a constantly increasing extent. In 1909 there were 232 state hospitals in the United States, in 1930 there were 581, a numerical increase of 150.4 per cent. In 1909 the bed capacity of state hospitals was 189,049, in 1930 it was 405,309, a capacity increase of 114.3 per cent. In 1909 there were 71 federal hospitals in the continental United States, in 1930 there were 288, a numerical increase of 305.6 per cent. In 1909 the bed capacity of federal hospitals was 8,827, in 1930 it was 63,581, a capacity increase of 620.3 per cent.

Such strides in the building and enlarging of hospitals by federal and state governments may be interpreted in either of two ways: one may see in it a belated recognition of civic duty in the matter of chronic cases where family financial support fails, or one may view it as a preparatory step in a policy of unlimited expansion whose ultimate goal is state medicine.

That improvements in the way of scientific equipment for the care of the sick have kept pace with the expansion in the capacity of hospitals is shown by the fact that from 1923 to 1930 the number of laboratories in hospitals increased from 3,035 to 4,249. During the same time the number of x-ray departments increased from 2,841 to 4,523. The departments of physical therapy in hospitals numbered 2,091 in 1927 and 2,236 in 1930. And along with the increase in the number of these adjuncts to diagnosis and treatment in hospitals has come increased demand that these departments be under the supervision of medical practitioners who are specially qualified.

GROWTH OF OUTPATIENT SERVICE

The outpatient service of hospitals has grown steadily in recent years. Indications are that this growth has been influenced more by the tendency to congregate in cities than by the increasing density of population in general. In 1921, 678 hospitals reported that 3,000,163 outpatients made 9,552,123 visits to the outpatient department. In 1929, 1,027 hospitals reported that 6,644,983 outpatients made 19,056,394 visits.

INTERDEPENDENCE OF HOSPITALS AND PHYSICIANS

The greater the development of such institutions as have been described, the more extensive their use by the people, the more active must become the interest of the physician in their direction and control. It seems so simple to leave the economics, the construction, the administration of hospitals to lay boards and superintendents that far too many physicians are content simply to have the hospital as a work place ready for them and their patients. Thus the attitude has grown among many philanthropists and hospital workers that the physician is the recipient of these facilities from the public and must therefore be under their direction. Nothing could be more fallacious. The doctors make the hospital. Without them it necessarily fails. Its merits are equivalent to their merits and cannot surpass them. This fact should be realized by lay directors who should take their medical staffs into

consultation on every matter affecting the welfare of the institution and be guided by them in every scientific problem.

COLORADO SUNSHINE

So much is said nowadays about the dearth of sunshine and its consequent detriment to human well being that it is interesting to discover some of the regions where nature's beneficent sun rays are always available in abundance. The existence of seasonal variations and their effects on the incidence of infantile rickets have been repeatedly stressed in recent years. For example, Tisdall and Brown¹ found the antirachitic effect of sunshine at Toronto in April and May to be approximately eight times as great as in December, January and February. Day² recently reported a seasonal variation in the antirachitic potency of Arkansas sunshine. He found that whereas an average daily exposure to sunshine of ten minutes over a period of forty days during June and July was sufficient to induce calcification in rats fed a rachitogenic diet, incomplete protection against rickets resulted from two and one-half hours' daily exposure to sunshine in January and February. According to Hess,³ in the tropics rickets is almost unknown, occurring merely in mild form or in cases in which the infant has been confined indoors for a long period. It will be found that the intensity of rickets throughout the world corresponds fairly closely to the amount of sunshine. When one bears in mind the varying diet of the peoples in the different parts of the world represented by these centers of population, he adds, the dominance of sunlight in the etiology of rickets is most striking. The fact that rickets, osteomalacia and tetany develop in India, where the women are deprived of the benefit of the tropical sunshine by observing the system of purdah, emphasizes still more strikingly the dependence of rickets and cognate clinical conditions on exposure to the sun's rays. Hess has pointed out further that the dominant factor in regard to the antirachitic activity of the solar rays is not so much the number of hours of sunshine as its quality and intensity. These properties go hand in hand.

Colorado has long enjoyed the reputation of having a salubrious climate. Recent experiments by Lewis and his co-workers⁴ at the University of Colorado School of Medicine, Denver, indicate that the effective biologic rays of sunlight in June and July are quantitatively of a greater magnitude in Colorado than in any of the other places where the antirachitic effect of sunlight

1 Tisdall F. F. and Brown, Alan. Seasonal Variation of the Antirachitic Effect of Sunshine. *Am. J. Dis. Child.* 34: 721 (Nov.) 1927.

2 Day P. L. The Seasonal Variation in Antirachitic Potency of Arkansas Sunshine, read at the Atlanta meeting of the American Chemical Society, May 1930.

3 Hess A. T. Rickets Including Osteomalacia and Tetany. Philadelphia: Lea and Febiger, 1929.

4 Stein H. B. and Lewis R. C. Rickets. The Comparatively High Value of Colorado Sunshine in Its Prevention. *Am. J. Dis. Child.* 41: 62 (Jan.) 1931. Lewis R. C., Frumess G. M. and Stein H. B. A Comparison of the Antirachitic Effects of Winter and Summer Sunshine in Colorado. *ibid.* 41: 71 (Jan.) 1931.

has been studied. They believe that the relative freedom of the atmosphere from moisture and smoke offers satisfactory explanation of the comparatively high antirachitic potency of Colorado sunshine. The observations on experimental animals are supported by records of a comparatively low incidence of rickets in Colorado.⁵ Another striking feature is the demonstration that there is no great difference in the antirachitic effect of winter and of summer sunshine in Colorado. Elsewhere sunshine may vary. Climatic variabilities have assumed significance in a new way in present day medicine. They furnish an illustration, says Hess, of what we have recently become sensible of in regard to nutrition—the lack of relationship, one may almost say the inverse relationship, between abundance of supply and indispensability of food constituents. The vitamins furnish a striking example of this principle. The law of “the vital importance of the minimum” applies to the radiations of the sun—those rays which are furnished in smallest amount and in least intensity are nevertheless most indispensable.

THE ETIOLOGY OF HODGKIN'S DISEASE

Negative results in research are not nearly so exciting as positive, but they are important and, unfortunately, seem to have a higher average of reliability than most of the results reported as positive. A particularly important report of negative results has recently been published under the title of the etiology of lymphadenoma, a summary of six years' researches, by C. C. Twort,⁶ pathologist to the Manchester Committee on Cancer. By lymphadenoma is meant what most American physicians usually call Hodgkin's disease and what Germans often designate as lymphogranulomatosis, one of many striking illustrations of the distressingly confused conditions of medical nomenclature. The importance of the report lies in the fact that it is based on an extremely careful study by many methods on a large amount of material, sixty-one cases positively identified by the presence of typical “lymphadenoma giant cells,” and twenty-one cases either probably or possibly lymphadenoma. Most pathologists who have struggled with the diagnosis of biopsy sections from lymph nodes will be gratified by the fact that after six years of special study Twort is compelled to state that “there appears to be no single feature which permits one to diagnose lymphadenoma with certainty.” He ventures the observation “Besides the presence of lymphadenoma giant cells and the eosinophil cells, mitosis of the various cells outside the germinal centers, in a gland free from hemorrhages, appears to be an important diagnostic point.”

Despite a vast number of experiments by many methods it was not found possible to demonstrate consistently any specific animal or vegetable parasite in the

disseminated tissues. Cultures of lymph nodes removed before death were in almost all instances sterile, and it was not possible to repeat “the positive animal infection experiments which many other workers have been fortunate enough to obtain.” The ameba of Kofoid and the granular tubercle bacillus of Fraenkel and Much could not be found, nor could the diphtheroid organisms of Bunting and Yates be cultivated. Tissues from forty cases microscopically free from tuberculous lesions were injected into 150 guinea-pigs without a single animal developing tuberculosis. Indeed, in this series there seems to have been much less association with tuberculosis than most pathologists have observed, for, in the eighty-two cases of certain, probable or possible lymphadenoma, tuberculosis was absent in all antemortem specimens and present in but three of the twenty-seven necropsies.

It is unfortunate that inoculation experiments could not have been carried out with monkeys and apes and that no inoculations were made in fowls, in view of the suggestion of L'Esperance⁷ that Hodgkin's disease is a form of avian tuberculosis in man. It is recorded that the patients who were tested with tuberculin gave negative reactions. An assortment of other *in vivo* and *in vitro* experiments gave absolutely barren results. Twort says that the different experimental procedures so invariably led to nothing that one might have been dealing with a true new growth “instead of what is generally accepted as a granuloma.”

Current Comment

ALLERGIC ABSORPTION RATE

It is a tempting clinical hypothesis to assume that certain individuals develop allergic syndromes because of hyperpermeability of exposed mucosae, normal individuals remaining free from symptoms because of adequate resistance to absorption of protein. This simple mechanistic theory of allergy, however, is without experimental foundation. Drs. Cohen, Eckel, Briethart and Rudolph⁸ of the Western Reserve University Institute of Pathology, in attempting to supply such experimental evidence, unwittingly demonstrated the exact opposite—an increased resistance to alien protein absorption through hypersensitive mucosae. A similar paradox was previously reported by Brunner and Walzer.⁹ Studies of protein absorption through exposed mucosae are made possible by the application of the Prausnitz-Kustner technique, involving passive sensitization of local skin areas by intracutaneous injection with allergic or atopic human serum, control injections being made with normal human serum. Twenty-four hours after local sensitization to ragweed protein the Cleveland investigators blew ragweed pollen into the nostrils of their normal individuals, care being taken

⁵ Forbes R. P., Green B. and Stephenson T. B. *Arch. Pediat.* 43: 131 (Feb.) 1926.
⁶ Twort C. C. *J. Path. & Bact.* 33: 539 (July) 1930.

⁷ L'Esperance E. J. S. Study of a Case of Hodgkin's Disease in a Child. *J. Immunol.* 15: 127 (Feb.) 1920.
⁸ Cohen M. B., Eckel E. E., Briethart J. R. and Rudolph J. A. *J. Immunol.* 15: 419 (June) 1930.
⁹ Brunner Matthew and Walzer. Maternal Allergy to Ragweed Proteins in Human Being. *Arch. Int. Med.* 44: 172 (Aug.) 1930.

to prevent swallowing. Within from fourteen to thirty minutes local itching was experienced in the sensitized skin areas, followed by redness and the formation of wheals, no reaction taking place in control areas injected with normal human serum. Similar tests on allergic individuals—none of them, however, sensitive to ragweed protein—showed a markedly delayed protein absorption, the formation of wheals never taking place sooner than forty-seven minutes, many of the allergic individuals showing no Prausnitz-Kustner reaction by the end of two hours. Subsequent tests on these non-reacting individuals showed the local skin areas still specifically hypersensitive. The conclusion was drawn that the allergic mucosa is provided with a protein-capturing mechanism, conceivably similar to the local protein-fixation mechanism demonstrated by Opie¹⁰ in hypersensitive rabbits. Since "every one living in the ragweed belt absorbs sufficient [ragweed pollen through the nasal mucosa] to develop sensitivity if the other conditions are suitable for its development," the etiology of allergy must be referred to hereditary tendencies, developmental subfunctions, embryonic reversions and other current hypotheses.

Association News

CONTRIBUTIONS FOR MEDICAL SALON IN PERSHING HALL

The sum contributed this week for the Pershing Memorial in Paris brings the total to \$2,215.60. A list of those who have contributed during the current week follows:

O. S. Werner, M.D., Cambridge, Minn.	F. L. Hawkins, M.D., Meredith, N. H.
W. O. Arnold, M.D., West Palm Beach, Fla.	F. S. Kent, M.D., Burlington, Vt.
A. W. Schreiber, M.D., La Fayette, Ind.	William T. Coughlin, M.D., St. Louis
	E. M. Mikkelsen, M.D., Chicago

THE PHILADELPHIA SESSION

Special Exhibit on Fresh Pathology in the Scientific Exhibit—Guest Demonstrators

Announcement is made of the appointment of the Committee on Fresh Pathology Exhibit for the 1931 Session of the American Medical Association. The committee consists of Drs. J. T. Bauer, Ayer Laboratory, Pennsylvania Hospital; E. A. Case, professor of pathology, University of Pennsylvania Graduate School of Medicine; J. H. Clark, director of laboratories, Philadelphia General Hospital; R. P. Custer, department of pathology, University of Pennsylvania; John Eiman, department of pathology, Presbyterian Hospital; John I. Fanz, professor of pathology, Temple University School of Medicine; Herbert Fox, director of Pepper Laboratory, University Hospital; Baldern Lucke, associate professor of pathology, University of Pennsylvania School of Medicine; V. H. Moon, professor of pathology, Jefferson Medical College; Stanley Reimann, department of pathology, Lankenau Hospital; Russell Richardson, professor of pathology, Methodist Hospital; G. M. Robson, department of pathology, University of Pennsylvania School of Medicine; and I. T. Zeckwer, department of pathology, University of Pennsylvania School of Medicine. Dr. E. B. Krumbhaar, professor of pathology, University of Pennsylvania School of Medicine, has consented to accept the appointment of chairman of this committee.

The committee has made arrangements for securing ample surgical and necropsy material from the chief hospitals in Philadelphia, including the Philadelphia General Hospital which alone averages over twenty necropsies a week. The members

of the committee representing different hospitals have generously placed at the disposal of the committee anything that may be of interest at the respective institutions. The members of the Local Committee on Fresh Pathology will also take part in various demonstrations throughout the session week except during the schedules for the guest demonstrators.

Following the plan adopted last year, guest demonstrators will be a feature of the Fresh Pathology Exhibit again this year. The guest demonstrators and their general topics will be as follows:

Dr. Frank W. Hartman	Detroit	Pathology of the Kidney
Dr. Howard T. Karsner	Cleveland	Pathology of Heart Disease
Dr. James P. Simonds	Chicago	Pathology of the Gastro-Intestinal Tract and Liver
Dr. Milton C. Winternitz	New Haven	Pathology of the Lungs and Blood Vessels

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts at 10 a. m. on Monday, 10 45 on Tuesday, 9 15 on Thursday and 10 30 on Saturday over Station WBBM (770 kilocycles or 389.4 meters).

The program for the week is as follows:

March 30	Mental Health Slogans
March 31	Our Smoky Cities
April 2	The Shoe of Tomorrow
April 4	Big Medicine

Five minute health talks may be heard over the Columbia Broadcasting System daily, except Sundays and holidays, from 12 to 12 05 p. m., Central Standard Time.

The program for the week is as follows:

March 30	The Lady and the Fashions
March 31	University Health Officer Speaks—Keeping the School Child Well
April 1	What Drinking Fountain Is Sanitary?
April 2	Cancer of the Mouth
April 3	We Speed and We Die
April 4	Chemistry Aids Medicine

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SEPARATING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Hospital News—New clinical and research laboratories at Mount Zion Hospital, San Francisco, were formally opened, January 23. Dr. Leo Buerger gave an address on "Thrombo-Angiitis Obliterans." The director of the research institute and clinical laboratories is Dr. Frederick Ebersson, assistant professor of medicine at the University of California Medical School. A new department of pathology has been established under the direction of Dr. Glenville Y. Rusk, professor of pathology, University of California. The cornerstone of the new Los Angeles County General Hospital was laid Dec. 7, 1930 (THE JOURNAL, June 4, 1927, p. 1817).

Society News—The eighty-fourth semiannual meeting of the Southern California Medical Association will be held in the Hotel Del Coronado, Coronado Beach, April 10-11. Guest speakers will be Drs. Walter C. Alvarez, Rochester, Minn., on "Diagnosis of Gastro-Intestinal Diseases from the History"; Emile F. Holman, San Francisco, "Fundamental Principles Underlying the Treatment of Intrapulmonary Suppuration and Persistent Bronchial Fistula," and Francis de Groer, University of Leuven (Lemberg) Poland, "Diet in Fever." Papers will be given also by Drs. Francis M. Smith, San Diego, "Renal Insufficiency in Hypothyroidism"; Norman J. Kilbourne, Los Angeles, "Choice of Solutions in Injection Treatment of Varicose Veins"; Hugh T. Jones, Los Angeles, "Indications for the Choice of Conservative Surgery in Chronic Osteomyelitis"; Robert S. Smylie, Jr., San Diego, "Calcium Therapy in Acute Pelvic Inflammatory Disease," and Emil F. Tholen and William S. Kiskadden, Los Angeles, "Primary and Secondary Repair of Harelip."

¹⁰ Opie, E. L. J. Exper. Med. 39: 659 (May) 1924.

COLORADO

Bill Introduced—H 400 proposes a new act for the organization, construction, management and control of county public hospitals. It provides, among other things, that in the management of such hospitals no discrimination shall be made against the practitioners of any recognized school of medicine.

CONNECTICUT

Bill Introduced—S 209 proposes to provide that stillbirth certificates be signed by attending physicians and that in cases in which there are no attending physicians the certificates shall be signed by medical examiners.

GEORGIA

Society News—Physicians from New Orleans, Memphis, Dallas, Little Rock and other Southern cities organized the Southern Interurban Gynecological and Obstetrical Society in Atlanta, January 26. Speakers on the scientific program were Drs Charles B. Upshaw, on management of eclampsia; William F. Shallenberger, endometrioma; and Emmett D. Colvin, review of cesarean operations in Atlanta. Clinics were held at the Emory unit of Grady Hospital by Drs Upshaw and Rudolph A. Bartholomew. Dr James J. Clark addressed the Fulton County Medical Society, March 5, at Atlanta, on "Radiation Menopause in Treatment of Cases of Tetany and Angina Pectoris." Dr Lancelot Minor Blackford presented a clinical talk on "Functionally Two-Chambered Heart."

ILLINOIS

Bills Introduced—S 221 proposes to make the facilities of the state colony for epileptics available also for those suffering from "post encephalitis" or other mental diseases. S 231 proposes to provide for the licensing and supervision of child welfare agencies and boarding homes. S 234 proposes to regulate maternity hospitals and to provide for their licensing by the state department of health. H 484 proposes to prohibit the distribution in public schools of any printed, written or oral matter favoring any particular school or system of medicine or any special remedy purporting to confer immunity from disease or to effect a cure. H 515 proposes the issuance after examination of licenses to practice osteopathy and to practice surgery in all its branches, to applicants graduating from schools teaching osteopathy and surgery, which at the time of the graduation of such applicants require as a prerequisite to admission a four years' course of instruction in an accredited high school and a two years' course in a college of liberal arts or its equivalent. Such applicants, in addition, must show evidence of twelve months' training in reputable hospitals or clinics. Present practitioners of osteopathy who have been in active practice for at least eight years, are graduates of osteopathic schools and have completed courses of instruction in surgery may take examinations for licenses to practice surgery in all its branches. For such practitioners the requirement relating to the successful completion of a two years' course in a college of liberal arts is waived. Under the present law, persons licensed to treat human ailments without the use of drugs or medicines and without operative surgery may take examinations in materia medica, therapeutics, surgery and obstetrics, and may receive licenses to practice medicine in all its branches if they pass such examinations but in order to be admitted to such examinations they must submit proof (1) of having completed in a medical college or a professional school teaching some system of treating human ailments, reputable and in good standing in the judgment of the department of registration, courses of instruction in materia medica, therapeutics, surgery, obstetrics and theory and practice deemed by the department to be equal to the courses of instruction required in those subjects for admission to the examination for a license to practice medicine in all its branches, (2) of a two years' course of instruction in a college of liberal arts, and (3) of at least twelve months training in a reputable hospital.

IOWA

Personal—Dr Daniel C. Steelsmith, who has been acting state commissioner of health since the death of Dr Henry Albert in April, 1930, has been appointed commissioner by Governor Turner.

Bills Introduced—S 334 proposes to appropriate \$30,000 annually to the state department of health for demonstrating and maintaining full time county health units. H 485 proposes to provide for the sexual sterilization of certain inmates of state institutions. H 499 prohibits the sale of food in any retail

establishment selling or offering for sale any poisonous or narcotic substances or fluids. H 490 proposes to create a board of examiners for suggestive therapeutics and to regulate such practice, defined as the treating of human ailments without the aid of surgery or drugs by means of human magnetical forces and human mental suggestion accompanied by the laying on of hands and physical manipulation.

MAINE

Bills Introduced—S 733 proposes that the superintendents of state hospitals for the insane may, in their discretion, receive all patients in need of special care and treatment. S 602 proposes that the supervision of public health nursing in schools in cities and towns and the work of public health nurses employed in schools shall be under the supervision of the state department of health through its division of public health nursing and child hygiene.

MARYLAND

Bills Introduced—S 198 proposes that, until 1936, no real estate held for future use and not for investment, by any hospital not organized or conducted for profit shall be subject to state county or municipal taxation. H 344 proposes to make it a misdemeanor for any person to experiment or operate in any manner whatsoever on any living dog, for any purpose other than the healing or curing of said dog.

Health Officer of Virgin Islands Appointed—Dr Charles H. Halliday, epidemiologist for the State Department of Health of Maryland for the past two years, has been appointed commissioner of health for the Virgin Islands by Gov. Paul M. Pearson. Dr Halliday, who was graduated from the College of Physicians and Surgeons, Baltimore, in 1904, was formerly epidemiologist of the California State Department of Health and for the Minnesota State Department of Health. He was engaged in public health work in the Philippine Islands and after the World War, spent a year and a half in typhus fever control work in Poland.

MASSACHUSETTS

Personal—Dr Eugene Walker, formerly assistant director of administration of the University Hospitals of Cleveland, has been appointed superintendent of Springfield Hospital to succeed the late Dr. Harold Waters Hersey.

The New Medical Center—Ceremonies marking the laying of the cornerstone for the New England Medical Center in which Tufts College Medical School, the Boston Floating Hospital and the Boston Dispensary will cooperate, were held January 26. Dr. Merritt H. Eddy, Middlebury, Vt., believed to be the oldest family physician in New England, was chosen to perform the ceremony of laying the cornerstone. The day was Dr. Eddy's ninety-eighth birthday. Dr. Alfred Worcester, Henry K. Oliver, professor of hygiene, Harvard University, gave an address. The center when completed will have three buildings: the Jackson Memorial Building of the Boston Floating Hospital, the Center building for clinics and quarters for nurses, and the dispensary building.

MINNESOTA

Bill Introduced—S 246 proposes that all persons who are now assistant pharmacists and who have been actively engaged as such since Jan. 1, 1927 shall be entitled to be registered as pharmacists without examination on application to the board of pharmacy and the payment of \$50.

MISSOURI

Gift of Old Prints—Dr. Makern B. Clopton, assistant professor of clinical surgery, Washington University School of Medicine, recently gave to the university a collection of more than 200 prints ranging from sixteenth century woodcuts to contemporary etchings. It is planned to establish an art center including a museum at the university. Included in the collection are a Rembrandt etching "The Three Crosses," a woodcut by Albrecht Dürer "The Mass of St. Gregory," four etchings by James McNeill Whistler, and an etching by Francisco Goya.

NEVADA

Bills Introduced—S 122 proposes to amend the medical practice act. Special meetings of the board are to be held at the call of the president or of not less than three members. Certificates by reciprocity may now be issued to (1) physicians of the United States unless they have declared their

intentions of becoming such or (2) persons who have not engaged in active practice for one year prior to the filing of their applications. It is also proposed that members of the board receive necessary traveling expenses and \$20 a day for time actually spent in the business of the board. The board is also authorized to employ investigators and necessary assistants. The expenses of the board must be paid out of the fees received by it and may never come out of the general fund of the state treasurer. Additional grounds for the revocation of licenses to practice medicine are also proposed. It is also to be a misdemeanor for any licensee to fail to furnish within ten days after demand by the secretary of the board a list of persons practicing the healing art in the licensee's office, or for any person willfully to make a false statement in a material regard in the affidavit required of applicants. S. 123 proposes to require the wardens or superintendents of state institutions to provide dental services for the inmates thereof. A. 225, to amend the osteopathic practice act, proposes (1) to define osteopathy as "that system of the healing art by which the operator treats the patient by manipulation of the body by the hands of the operator only" and (2) to provide that osteopathic physicians and surgeons shall have the same rights as physicians and surgeons of other schools of medicine, except that it shall be unlawful for them to prescribe or dispense any drugs or medicines or treat patients in any manner except as prescribed above.

NEW YORK

Society News—Dr. Thomas Parran, Jr., discussed the county health department and Dr. William H. Ross, public relations of a medical society at the Medical Society of the County of Nassau, Garden City, February 24.—Dr. Ernest E. Irons, Chicago, addressed the Buffalo Academy of Medicine, February 25, on "Facts and Fallacies Concerning Protein Therapy."

Bills Introduced—A. 1723 proposes to make it a misdemeanor to broadcast by radio any speech or remarks relating to medicine or using medical terms, or diagnosing any disease or ailment, or prescribing or recommending any form of medical or surgical cure, or any form of diet, unless the speaker is a duly licensed physician. S. 744, to amend the workmen's compensation act, proposes that compensation shall be payable for disabilities sustained or death incurred by an employee resulting from any occupational disease or illness which medical testimony establishes to be directly due to or caused by any employment coming within the act. A. 1855, to amend the compensation act, proposes to make compensable "fibrosis of the respiratory tract due to exposure to silica or rock dust." S. 1580 proposes that a certificate of birth of a child born in a hospital shall contain a photograph of the finger prints of the mother and the foot prints of the child, the impression of which shall be taken as soon after birth as is practicable.

New York City

Health Center in the Bronx—The first city built health center will be erected in the Bronx. The new building will be of stone and brick fireproof construction and will occupy the site at 349 East One Hundred and Fortieth Street, it will cost about \$175,000. Tentative plans provide for a three story building. The health center will be in about the center of population, as indicated by the schools and school registration.

University News—Gifts totaling about \$103,661 were given in January to Columbia University, it is reported. The Rockefeller Foundation gave \$51,000, of which \$36,000 is for studies of nutrition in Porto Rico, and \$15,000 for a study of compensation for automobile accidents now being conducted under the Council for Research in the Social Sciences. The Commonwealth Fund gave \$32,300 for dental research work. The General Education Board gave \$3,000 for a subdepartment of tropical medicine at the College of Physicians and Surgeons, and the International Committee for the Study of Infantile Paralysis, \$2,500 for the Milbank Paralysis Fund.

NORTH CAROLINA

Bills Introduced—S. 405, to amend the workmen's compensation act, proposes that a compensable disfigurement shall include the loss of any member or organ of the body for which no compensation is payable under the schedule of specific injuries set out in the act. H. 943, to amend the workmen's compensation act, proposes to provide that the compensation commission may at any time, on the request of an employee, order a change of physician and designate a physician suggested by the injured employee. S. 354 proposes that the North Carolina Board of

Health shall consist of nine members, four of whom shall be elected by the Medical Society of the State of North Carolina and five appointed by the governor. H. 975 proposes that the right to perform an autopsy on a dead human body shall be limited to cases (1) specially provided for by statute, (2) where so directed by the deceased, (3) where a coroner or the majority of a coroner's jury deem it necessary, on an inquest, and (4) where the husband or wife or one of the next of kin or other person charged by law with the duty of burial, in the order named and as known, shall authorize such autopsy.

OHIO

Bills Introduced—H. 541 proposes to require pharmacies to pay annual license fees, varying from \$5 to \$250. H. 588 proposes that on the approval of the county boards of health physicians in the proper and regular practice of their profession and in good faith may prescribe narcotic drugs for addicts in correctional treatment.

OKLAHOMA

Bills Introduced—H. 96 proposes to authorize the establishment of a state hospital for the Negro insane. S. 232 proposes (1) that hospitals shall have liens on patients' property brought therein for charges due for hospital fees, nursing, medical and professional services and (2) that it shall be a misdemeanor for any person to obtain hospital service with the intent to defraud hospitals of payment.

Fund for Research in Hematology—A fund was recently established at St. John's Hospital, Tulsa, by Mr. Mark Finston, Tulsa, for research work in hematology. The amount of the fund was not announced, but it is reported that additions will be made as conditions demand. It will be used to study blood changes in various diseases and the working out of specific problems in blood diseases. This is believed to be the first research fund established in Oklahoma.

PENNSYLVANIA

Society News—Drs. William A. Frontz and Charles A. Waters, Baltimore, addressed the Lycoming County Medical Society, March 13, on "Surgical Treatment of Cancer of the Prostate and Bladder" and "Radiation Therapy of Lesions of the Genito-Urinary Tract," respectively.—Dr. Herman Henry Van Horn addressed the Dauphin County Medical Society, March 3, on "Pathology, Diagnosis and Treatment of Blood Diseases."—Dr. Walter D. Hawkins addressed the Harrisburg Academy of Medicine, February 17, on diabetes mellitus.—Dr. Charles R. Reiners addressed the Huntingdon County Medical Society, March 12, on laboratory routine.—Dr. Russell L. Hyden, Cleveland, addressed the Cambria County Medical Society, March 12, on "Types and Treatment of Chronic Rheumatism."

Philadelphia

Health Department Positions Made Competitive—According to a recent ruling of the Civil Service Commission 557 positions in the city health department will be made competitive and subject to examination after March 31, it is reported. The positions affected are those paying more than \$1,000 a year. Seven of them are in the bureau of health, 264 in the Philadelphia General Hospital, 174 in the Hospital for Contagious Diseases, and 112 in the Philadelphia Hospital for Mental Diseases at Byberry.

RHODE ISLAND

Bill Introduced—H. 801 proposes to incorporate the osteopathic hospital of Rhode Island.

Society News—Dr. Stanley S. Freedman presented a "Review of Some Rare Diseases of Infancy and Childhood with Special Reference to Gaucher's Splenomegaly and Niemann-Pick's Disease" before the Providence Medical Association, March 2, and Drs. Ira H. Noyes, Bance Feinberg and Henry F. McCusker spoke on birth injuries.—The Joseph Samuels Dental Clinic for Children was dedicated, March 18, at the Rhode Island Hospital, Providence. Col. Joseph Samuels, founder of the clinic, was given a testimonial dinner on the same date by the Rhode Island Dental Society.

SOUTH DAKOTA

Bill Enacted—S. 37 provides that any person, who in 1927 had been engaged in the practice of pharmacy for one year shall have the right to registration under the requirements of the law enforced prior to 1927, provided such registration is completed before July 1, 1933.

TEXAS

Bill Introduced—H 846 provides for the commitment to a state, county or city hospital or to the county jail of persons addicted to the use of opium, morphine, heroin, coca leaves, cocaine, marijuana, or any preparation thereof

WASHINGTON

Society News—Dr Evans A Graham St Louis, addressed the King County Medical Society, Seattle, March 9, on the operative risk in patients with disease of the biliary tract. Drs Christian J Rohwer and Glenn G Grover spoke, March 2, on cerebral vascular lesions and paralytic ileus, respectively. —Drs Stephen T Parker, Jr, and Wilfred A Ash, Seattle, presented papers before a joint meeting of the Clallam and Jefferson county medical societies, February 19 on "Latent Cutaneous Syphilids" and "Medical Aspects of High Intestinal Obstruction," respectively

WISCONSIN

Bills Introduced—A 497, to amend the workmen's compensation act, apparently authorizes chiropractic treatments for injured employees. A 345, to amend that portion of the medical practice act which provides that three members of the examining board shall be allopathic, two homeopathic, two eclectic and one osteopathic, proposes that seven members of the board shall be practitioners of medicine and surgery and one member shall be a practitioner of osteopathy

GENERAL

Medical Subjects on Chemists' Program—At the eighty-first meeting of the American Chemical Society, Indianapolis, March 30-April 3, nearly 100 papers bearing on medical aspects of chemistry will be presented. Among the speakers and subjects listed on the program are Walter H Eddy, Ph D, vitamins; Arthur J Hill, Ph D, synthesis of local anesthetics; Dr Robert A Kehoe, chemical methods in the recognition, prevention and treatment of lead poisoning; Henry C Sherman, Ph D, and Miss Esther L Batchelder, quantitative measurement of vitamin A values; Arnold E Osterberg and Dr Ralph G Mills, osteoporosis associated with hyperthyroidism from the chemical standpoint; Shiro Tashiro, Ph D, and Leon H Schmidt, biochemical factors involved in the production of gastric ulcer; Edward F Kohman, Walter H Eddy, Ph D, and Celia Zall Gurin, a diet of canned food; and Donalee L Tabern and Elmer F Shelberg, physicochemical properties and hypnotic action of substituted barbituric acids

News of Epidemics—Newspapers reported, March 3, that smallpox was epidemic in Lima, Ohio, a city of 42,000, with 175 cases quarantined. The state health department reported that 400 cases had been quarantined in the state during January. —Measles, scarlet fever and diphtheria were epidemic in southern Illinois in February. Strict quarantine was imposed at New Athens and Harrisburg, school attendance was cut 25 per cent in West Frankfort, Benton and Herrin. According to the state health department, 8,024 cases of measles were reported in the state during the first nine weeks of 1931. —Seventy-five cases of smallpox were reported in Iowa for the week ended March 5, of these, 34 were in Scott County. —Three cases of cerebrospinal meningitis were discovered in Owensboro, Ky, February 20, four cases occurred in a high school in Columbus, Ohio, March 4. —Fourteen cases of smallpox were reported from Anderson, Ind, March 10. —Four cases of typhoid at Plymouth, Ohio, were attributed to the city water supply

Society News—The sixteenth annual meeting of the American Radium Society will be held in Philadelphia, June 8-9. Tentative plans for the program include symposiums on malignant growths above the clavicle, led by Dr Douglas Quick, New York, on carcinoma of the breast, led by Dr Burton J Lee, New York, and on malignant growths of the female genital tract led by Dr Henry Schmitz, Chicago. —At the annual meeting of the Southeastern Surgical Congress, March 9-10, in Atlanta, Dr Charles W Roberts, Atlanta, was elected president. Dr Frank K Boland, Atlanta, was made president-elect. Dr Alfonso J Mooney, Statesboro, vice president, and Dr Benjamin T Beasley, Jr, Atlanta, secretary. Speakers included Drs William Wayne Babcock, Philadelphia, "Vaginal Hysterectomy," Donald C Balfour, Rochester, Minn, "Present Status of the Management of Peptic Ulcer," Virray P Blair, St Louis, "Plastic Surgery" and Hugh H Young, Baltimore, "Differential Diagnosis and Management of the Senile Prostate"

Foreign Letters

LONDON

(From Our Regular Correspondent)

Feb 28, 1931

The Shortage of Nurses

It is curious that in this period of unemployment there should be any shortage of labor in any calling. But the *Lancet* has appointed a commission to inquire into the reasons for the shortage of candidates for nursing the sick in general and special hospitals throughout the country and to offer suggestions for making the service more attractive for women suitable for this work. After an exhaustive inquiry the commission has presented an interim report. The reason most frequently put forward for the deficiency of nurses is the much wider sphere of women's work today. Many other occupations offer better salaries and better prospects with more freedom, more social amenities and without the restrictions and long hours of institutional life. For the solution of these difficulties some advocate 'living out' while others say it would be fatal to the profession. Superannuation schemes are advocated, others favor the reduction of menial work and the fixing of off-duty hours, so that the nurse can make social engagements. Some of the smaller hospitals attribute their difficulties to the fact that the training gained in them counts for nothing when the candidate enters an approved training school. Not many of the nursing authorities questioned believe in the lowering of the present educational standards but a number refer to the difficulty and disadvantages of combining ward with theoretical work, which makes the life of the probationer too arduous. To obviate this difficulty, preliminary training schools for some months before entering the wards are proposed. These would have the advantage of overcoming a problem continually put forward—the gap between the school leaving age and that at which the hospitals recruit. It is suggested that the education authorities might cooperate with the hospitals in the provision of schools for preliminary training in the theory of nursing. Under the present system the probationer is too tired by her ward work to take advantage of this training.

After training a difficulty is that the "staff nurse" regards her position as merely a stepping stone and immediately seeks a sister's post. Bound up with this difficulty is the opinion that, relative to the probationers, the trained staff nurses are underpaid. Finally the shortage of candidates is attributed to judging the profession by the conditions of the past and not by those of the present. An erroneous idea of overwork, underfeeding, and underpay exists and exaggerated reports of treatment by seniors remain in the minds of possible candidates and their parents. Propaganda for their correction is suggested.

The British Medical Association and Hospital Outpatients

In recent years a great increase has taken place in the number of hospital outpatients which reached a peak in 1911. Then owing to the national health insurance act and afterward to the Great War the number fell until 1920 when another increase began and continued until the number now exceeds that of 1911. In 1924 in 657 hospitals in England and Wales (excluding London), the number of new outpatients was 21,6770 and in 1928 the number had risen to 25,893,12. In the London hospitals the figure was 1,451,333 for 1921 and 1,760,807 for 1929. This rapid increase since the Great War may be partly explained by depression of trade. The British Medical Association has long contended that the primary object of the outpatient department should be for consultation and that it should undertake only such treatment as cannot be obtained from the doctor in private and that thus the more economical use of the subscriptions and of the time and energies of the medical

staffs would be promoted. The council of the association has made a report on the subject, in which the types of cases for which the outpatient departments are utilized are classified into four groups: (1) casualty cases, (2) chronic ordinary cases, (3) consultation cases, including those retained for special treatment, and (4) discharged inpatients. It is the chronic ordinary cases which are responsible for the bulk of the unjustifiable demands made on the medical staffs, and the council considers that a double check should be brought to bear on them. The patient should be examined but no treatment should be administered unless it is not available elsewhere. All patients not accepted for treatment should be referred to a private physician or (if the patient is insured) to an insurance physician, to a public medical service, to a provident dispensary, or to the public assistance officer, as the circumstances require. For complete success this procedure needs the active cooperation of the profession in the area from which the patients are drawn. In many instances all that will be needed is the one consultation, the patient being referred back to the source, with the diagnosis and suggestions for treatment. The primary object of the outpatient department should be for consultation. Except in cases of emergency, no person should be accepted for treatment in an outpatient department unless he brings a recommendation from a private physician, a provident or other dispensary, and a public clinic or public assistance medical officer.

The Prevalence of Cerebrospinal Fever

The ministry of health has issued a statement pointing out that periodic increases of cerebrospinal fever are not unusual. It was made generally notifiable in 1912, and from 200 to 300 cases were reported annually before the war. In the war years 1915-1917 there was an annual incidence in the civil population of from 1,300 to 2,500 cases. In 1928 the figure fell to 301, but since then the tendency has been upward. In the present year, 230 cases have already been reported in the civilian population and there is an outbreak among the soldiers in the garrison town of Aldershot. Of the cases now occurring about half are fatal. The meningococcus is found in the nose and throat passages of a large number of persons who remain well. Local outbreaks are favored by overcrowding in barracks and schools.

PARIS

(From Our Regular Correspondent)

Feb 11, 1931

The Controversy over BCG Vaccine

The veterinarian Lignieres continues to pose, before the Academy of Medicine, as an ingrained opponent of the BCG vaccine of Calmette and takes every opportunity to attack it. He does not deny its efficacy and uses it himself on new born calves to protect them from tuberculosis. But he advises confining its use to the new-born menaced by tuberculous antecedents and living in a tuberculous environment. He contends that the bacilli of the BCG vaccine are susceptible, under certain circumstances, of regaining their virulence, for instance, when they are cultivated in a series on egg yolk. He invokes, furthermore, the observations made in Uruguay by Mr. Hormaeche, which, he alleges, prove that the reappearance of virulence is possible in the guinea-pig if the animal has been previously infected by the streptococcus. Whenever a communication is presented to the academy on the BCG vaccine, Mr. Lignieres takes the floor. Recently, the occasion was a communication from Prof. Leon Bernard announcing the favorable conclusions formulated by the international congress on tuberculosis on the use of the BCG vaccine. Bernard had to take a strong stand against the proposal of Lignieres that the conclusions be not accepted. A short time afterward, Lignieres renewed his attack when Calmette presented a new communication on the BCG vaccine. He spoke of the fatalities that occurred in Lübeck, alleging that the use of the vaccine is at

present prohibited in Germany. Calmette thereupon read to the assembly a letter from the minister of health of Germany affirming the contrary. Lignieres had to bow before this presentation of facts but continued to maintain that the vaccine could regain its virulence under certain conditions. Here upon Professor Viquez urged that, in order to settle the question definitely, a new series of experiments be instituted.

National Congress of Tuberculosis

The seventh *Congrès national de la tuberculose*, organized by the *Comité national contre la tuberculose*, the *Oeuvre de la tuberculose* and the *Fédération girondine des œuvres antituberculeuses* will be held in Bordeaux from March 30 to April 2, 1931. The officials in charge of the congress are Messieurs Calmette, Dopter and A. Honnorat, honorary presidents, Dean Sigault, president, Professors Leon Bernard, Bezançon, Leuret, Parisot, Sergent and Drs. Courcoux, Poix and Secousse, general secretaries, Commandant Le Bourdelles, Dr. Royer and Mr. Vovard, secretaries, and Mr. Georges Masson, treasurer. The topics on the program are: (1) "The Bacteriolysis of the Tubercle Bacillus," presented by Professor Bezançon, Dr. Philibert and Dr. Paraf (Paris), (2) "Diagnosis of Activity in Pulmonary Tuberculosis," presented by Professor Beuret and Dr. Crussimon (Bordeaux), (3) "How Can Pneumothorax Treatment Be Made Accessible to Indigent Patients?" presented by Dr. Küss (Paris), Drs. Secousse and Piechaud (Bordeaux), and (4) "Prophylaxis of Tuberculosis in the Army," presented by Lieutenant-Colonel Pilod and Commandant Le Bourdelles (Val de Grace). Addresses will be given by Dr. Burnand (Lusarne) on "Present Status of Treatment of Tuberculosis" and by Professor Sive (Barcelona) on "Advances in Phthisiology and Dispensary Practice."

International Congress of Radiology

The third International Congress of Radiology will be held in Paris, July 26-31. The following subjects are on the program: (1) "Radiologic Exploration of the Mucosa of the Digestive Tract," (2) "Radiologic Exploration of the Urinary Apparatus by the Use of Opaque Substances," (3) "Preoperative and Postoperative Treatment of Cancer of the Breast by Irradiations, with the Exception of Recurrences and Metastases," (4) "Radiotherapy in Inflammatory Disorders," and (5) "Diathermic Electrotherapy in Inflammatory Disorders." Plenary sessions including all the sections will be held for periods of thirty minutes on each of these topics. Typewritten summaries of communications (comprising at least 400 words), in French, English or German, should reach the secretariat by April 1 (122 rue La Boétie, Paris, VIIIe).

Sanitary Measures for the Approaching Colonial Exposition in Paris

Sanitary measures pertaining to the transportation and the sojourn in France of the natives who will participate in the Exposition coloniale, which is to open May 1, are contained in a special ministerial order. Every native will be provided with an individual health record card, which will show that he submitted to a medical examination before he embarked, that he received antismallpox, antityphoparatyphoid, antipneumonic, anticholera and antiplague inoculations, and also that he has undergone the delousing process, treatment for scabies, and intestinal disinfection. His card will show also his state of health during the voyage and before disembarkation, his health while in France, illnesses, hospitalizations, and the like. Every month the natives will be subjected to a medical examination for purposes of control and a final examination will be made at the end of their stay. The state of health during the return voyage and at the time of disembarkation in the colony will be noted on the cards. The supply of medicines to be taken on board for the 250 natives has been carefully selected.

NETHERLANDS

(From Our Regular Correspondent)

Feb 4, 1931

International Society for Study of Scientific Problems of Population

The purpose of the International Society for the Study of the Problems of Population is to bring together biologists, sociologists, economists, physicians, statisticians and statesmen for the study of the problems of population to determine the optimal population for the countries of the world for the different epochs. Every country has its delegates serving on committees. The Netherlands committee belongs to the active committees and numbers fifty five members. Professor Aalberse is founder and president, Prof Verrijn Stuart is vice president. There are three investigating committees, the second of which, that on the frequency of births, is presided over by Professor Methorst. The first committee is to study the relations between the food supply and the birth rate and is presided over by Professor Mees of Wageningen. The third committee has no program, having received no instructions as yet from the international commission. The second committee is investigating the subject of well being, mortality and the birth rate. The facts that have been collected seem to prove that the Netherlands is operating, in this respect, under favorable conditions. The Netherlands committee has received a subsidy of \$300 from the funds of the international association and a new subsidy is requested. Thus the future appears full of hope.

Administration of First Aid

The association Oranje Kruis organized in each province on the same day competitive tests for those who have had training in the administration of first aid in case of accident. These competitive tests have a twofold purpose: (1) to give to those who have pursued faithfully the course in the administration of first aid in case of accident an opportunity to demonstrate their ability, and (2) to allow the masses to learn from those who have studied the subject how easy it is to render first aid in an effective manner by the use of simple devices. The contest in each province included a contest for bearers of first aid in the strict sense of the word and a contest for those who have taken a course in the methods of saving drowning persons. The contests are open to everybody. Special sections of the contest were organized for the police, the firemen, the railway employees, men in charge of transportations of troops, and first-aid crews.

The Netherlands Society of Social Medicine

The Netherlands society of social medicine was founded at Amsterdam under the chairmanship of Dr Van der Hoeve. The purpose of the society is to promote on a large scale the study and the development of hygiene and social medicine, and the establishment of connections between physicians who, either privately or in connection with some service, are active in the domain of hygiene and social medicine. In addition to scientific meetings, the society purposes to continue the publication of *Tijdschrift voor sociale Geneeskunde*, which is the official organ of the association.

The Meat of Tuberculous Cattle

According to Hoefnagel, the sections of the law pertaining to the examination of meat should be subjected to revision, and especially the section that reads: "In the presence of milary foci in the lymph glands or parenchymatous organs, a recent blood infection must be admitted and the meat must be sterilized." According to some authors the presence of milary foci by no means justifies the assumption of a blood infection. There are some authors who consider that milary foci must be present in the kidneys to justify sterilization. According to the present law, the veterinarian must order the meat sterilized whenever a tuberculous animal presents, in addition to encysted foci in

the lungs even isolated milary foci in one or more of the organs. According to Hoefnagel, it would be better to change the law so that sterilization would be compulsory in the presence of milary centers in the kidneys. The advantages would be considerable and it would not injure the public health for from Chrenburg's experiences it is evident that the meat of tuberculous animals rarely contains the bacilli of tuberculosis.

BERLIN

(From Our Regular Correspondent)

Feb 16, 1931

Berlin's Need of Radium

Director Dr Schweers of the central bureau of health in Berlin in an address recently, discussed cancer treatment in Germany and in foreign countries. France has 51 Gm of radium, England 42 Gm, Sweden more than 6 Gm and Denmark more than 4 Gm. In Paris there is about 10 Gm and in New York, where the total number of deaths from cancer is not much higher than in Berlin about 13 Gm is available. In Germany the organization of cancer control is still in the beginnings. In Cologne the Allgemeine Ortskrankenkasse has established a large irradiation institute and in Berlin the sick benefit associations have a small supply of radium. For some time the city of Berlin has been working toward the organization of cancer treatment and an aid system for cancer patients. The treatment of cancer patients should be combined in a few large centers. The department for roentgen and radium treatment must always be the central feature of such an organization. Alongside of that department and with equal rights and privileges, must be the departments of surgery, gynecology, dermatology and other similar departments. The specialists needed for such departments are available in Berlin. The technical equipment for such cancer centers is however, still inadequate. The chief need is radium. The city itself has not more than 0.5 Gm, and even this small amount is distributed over six hospitals. In the Charite Hospital and in the university clinics there are only a few milligrams of radium. For the municipal institutions at least 2 Gm of radium must be procured at the start. Owing to the high cost of such an amount (about \$125,000) a municipal appropriation, under present conditions, is out of the question. Possibly the central government can be prevailed on to supply the deficiency. The radium problem is in reality a government matter, in order to prevent useless duplication and an increase in price as the result of a superfluous demand.

A Merger for the Prevention of Neoplastic Diseases

A merger for the prevention and combating of neoplastic diseases was recently created in Berlin by the league of sick benefit associations, the medical profession and the provincial bureau of insurance. All patients who are affected with neoplasms or are suspected of being so affected are to be notified as early as possible, on a special uniform blank to an aid center that is managed by a board composed of members chosen on a parity basis from the three constituent organizations and that is in charge of a physician selected by the league. The patients so notified will, when advisable, be examined as to their degree of disability by an expert selected by the management in the choice of whom the desires of the panel physicians will be considered as far as possible. The decision as to disability will take the form of an authoritative order. The medical supervision of the patients will remain in the hands of the attending panel physician unless certain special measures that he cannot carry out are indicated and after completion of treatment by a specialist or in hospitals the patient will return to the treatment of his physician. In accordance with the agreement of the sick benefit associations the right of changing the panel physician or the specialist is reserved to the patient. The

the business center will be creation and continual improvement of the record cards of patients, sociohygienic aid for the patients and their families seeking out of patients who avoid treatment or supervision, if need be institution of a demand for an authoritative order, negotiations with the competent insurance carrier with regard to the assumption of the costs, transportation, observance of the dates for control examinations, statistical elaboration of the record cards of patients. On the basis of the agreement as entered into, the panel physicians are urged to make the notification in every case and to work toward securing a definitive diagnosis.

Culture of Embryonic Human Heart Tissue

Before the Berliner Medizinische Gesellschaft, K. Hofer exhibited recently tissue cultures of a beating embryonic human heart, which had been obtained from a 68 weeks old human embryo through an operation on a myomatous uterus, from which the heart, still beating, was taken three and one half hours after the operation. Six cover glass cultures were implanted in a mixture of human plasma, chicken plasma and chicken embryo extract. The experimenters were able to preserve until the thirty sixth day the contractility of the heart tissue after repeated transfers to new culture mediums. Before the first transfer to a new culture, there were, in one culture, two distinctly different contraction rhythms, each of which involved one half of the explant. After the transfer, a smaller center had a rhythm of its own, more rapid than that of the remainder of the explant. If the temperature was kept constant (39 C), the number and the depth of the contractions remained from 50 to 68 contractions per minute. After a time, the contractions slowly decreased in number and depth. Cooling of the tissues impaired the contractility, until at room temperature a standstill resulted. The contractions were confined strictly to the original explant. The fibroblasts that appeared in large quantities within twenty-four hours showed no active contractions.

Origin of the Neuroglia

Prof. Del Rio Hortega, histologist, of Madrid, delivered an address before the Berliner Medizinische Gesellschaft, on the third element of the central nervous system. Hortega, who is a pupil of Ramon y Cajal, has devoted himself to the histology of the neuroglia. The place of origin of "the third element" is the pia mater, where this type of cell is found—especially in brains of the young—as circular objects with pseudopodia. From these microglia-cytes develop microglia cells, they have an oval nucleus and processes with many branches. On experimental application to the brain of a red hot needle, the microglia cells migrate in large numbers to the site of the lesion, and the red and the white blood corpuscles exert a phagocytic action. During this process, fat globules and iron pigment are much in evidence. The functional activity of the amoeboid motion and the phagocytosis correspond to the cells of the reticulo-endothelial system in the rest of the body. From that fact, and owing to the development from the meningeal polyblasts, the mesodermal origin of the microglia is assumed.

Marriages

ELIAS WEINER, Alexandria, La., to Miss Pauline Mossoff in Brooklyn, N. Y., March 8.

LORAIN E. TEGTMEIER to Miss Elvira Nold, both of Millstadt, Ill., February 11.

W. J. ROBINSON, Portia Ark., to Miss Belle Ketchum of Imboden, February 4.

BRUNO C. COOK, Fowler, Mich., to Miss Marie O'Leary of Detroit, in January.

ARTHUR C. REITIC to Miss Agnes Smith, both of Muncie, Ind., March 10.

Deaths

Wilder Judd Walker, Greensburg, Pa., Western Pennsylvania Medical College, Pittsburgh, 1900, member of the Medical Society of the State of Pennsylvania and the Associated Anesthetists of the United States and Canada, served during the World War, for many years member of the school board, on the staff of the Westmoreland Hospital, aged 56, died, February 26, of erysipelas.

Clara Marshall, Philadelphia, Woman's Medical College of Pennsylvania, Philadelphia, 1875, formerly dean and emerita professor of materia medica and therapeutics at her alma mater, for many years on the staff of the Philadelphia General Hospital, aged 87, died, March 13, in the Bryn Mawr (Pa.) Hospital, of myocarditis and arteriosclerosis.

Louis Hicks Williams, Surg., Lieut. Commander, U. S. Navy, Chelsea, Mass., Johns Hopkins University School of Medicine, Baltimore, 1915, member of the American College of Surgeons, on the staff of the Naval Hospital, aged 40, died suddenly, February 18, in a hospital at Goldsboro, N. C., of encephalitis, following influenza.

William Taft Slayton, Morrisville, Vt., Baltimore Medical College, 1894, Harvard University Medical School, Boston, 1896, served during the World War, formerly member of the state legislature and state board of health, aged 61, died, March 3, in Miami, Fla., of chronic myocarditis.

Frederick J. Fielding, Chicago, Keokuk (Iowa) Medical College, 1896, on the staffs of the Lutheran Memorial Hospital and the Belmont Hospital, aged 64, died, March 9, of cerebral hemorrhage, as the result of a fall while trying to extricate a stalled automobile.

George F. Beasley, La Fayette, Ind., Rush Medical College, Chicago, 1864, member of the Indiana State Medical Association, Civil War veteran, formerly on the staff of St. Elizabeth's Hospital, aged 89, died, March 11, of myocarditis.

Arthur Pierre Latneau, Old Town, Maine, University of Vermont College of Medicine, Burlington, 1919, member of the Maine Medical Association, aged 36, died, February 3, in the Friendship Hospital, Bangor, of cholecystitis and appendicitis.

Richard Kuehne, Jersey City, N. J., Medical Department of Columbia College, New York, 1888, aged 79, died, February 14, in the North Hudson Hospital, Union City, of chronic interstitial nephritis, uremia and myocarditis.

Charles John Hood, Adrian, Mich., University of Michigan Medical School, Ann Arbor, 1887, member of the Nevada State Medical Association, aged 70, died, February 27, in Los Angeles, of coronary occlusion and duodenal ulcer.

Adellon P. Andrus, Ashland, Wis., Hahnemann Medical College and Hospital, Chicago, 1880, member of the State Medical Society of Wisconsin, aged 76, died, February 22, in the Ashland General Hospital, of heart disease.

Claude L. Sellers, St. Louis, St. Louis University School of Medicine, 1910, member of the Missouri State Medical Association, served during the World War, aged 46, was found dead, February 21, of a gunshot wound.

George Willard Treleven, Camp Borden, Ont., Canada, University of Manitoba Faculty of Medicine, Winnipeg, 1914, served in the Canadian Army during the World War, aged 41, died, February 11, of pneumonia.

Ulysses G. Williams, Minneapolis, University of Minnesota College of Medicine and Surgery, Minneapolis, 1889, formerly county coroner, aged 66, died, January 13, of lobar pneumonia and epidemic encephalitis.

Noah R. Wenger, Fort Wayne, Ind., Cincinnati College of Medicine and Surgery, 1880, aged 78, died, February 11, in St. Joseph's Hospital, of injuries received when he was crushed by an automatic elevator.

Irving David Wilttrout, Chippewa Falls, Wis., Jefferson Medical College of Philadelphia, 1878, member of the State Medical Society of Wisconsin, aged 75, died, February 28, of myocarditis and angina pectoris.

John Gerin, Auburn, N. Y., Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1872, formerly member of the city board of health, aged 61, died, February 15, of intestinal obstruction and influenza.

Arthur Campbell Kimball, St. Louis Medical Department of Washington University, St. Louis, 1903, on the staff

of the DePaul Hospital, aged 51, was found dead, February 3, of a self inflicted bullet wound

Samuel Nisley Traver $\oplus$ Harrisburg, Pa, Jefferson Medical College of Philadelphia, 1897, member of the American Urological Association, aged 58, was found dead, February 2, of a self inflicted bullet wound

Edwin Elmore Meyers, New Madison, Ohio, Eclectic Medical Institute, Cincinnati, 1889, aged 64, was instantly killed, February 14, when the automobile in which he was driving was struck by a train

Vincent Thomas Poole, Grantwood, N J, Marquette University School of Medicine, Milwaukee, 1913, member of the Medical Society of the State of New York, aged 39, died, in January, of pneumonia

Ernest Wellington Smith, Washington, D C Medical Department of Columbian University, Washington, 1908, aged 50, was killed February 1, near Fredericksburg, Va, in an automobile accident

Hallet B Hunt, St Paris, Ohio, Medical College of Ohio, Cincinnati, 1874, member of the Ohio State Medical Association, aged 84, died, February 9, of chronic interstitial nephritis and arteriosclerosis

Alexandre Ledoux $\oplus$ New Orleans, Medical Department of the Tulane University of Louisiana, New Orleans, 1891, aged 61, died, Dec 23, 1930, of coronary thrombosis and chronic myocarditis

James Hack Rush $\oplus$ Meridian, Miss, Mississippi Medical College, Meridian, 1910, aged 66, part owner of an infirmary bearing his name where he died, January 22, of chronic myocarditis

Philip Matson Thomas, Upperlake, Calif, Cooper Medical College, San Francisco, 1896, aged 58, died, Dec 23, 1930, in Los Angeles, of sclerosis of the coronary arteries of the heart

Otis Howard Bradley $\oplus$ Hudson, N Y, Medical Department of Columbia College, New York, 1889, aged 67, died, January 9, of angina pectoris and coronary thrombosis

Adelbert W Thorpe, Great Falls, Mont, St Louis College Physicians and Surgeons, 1895, aged 68, died, February 5 of carcinoma of the glands of the neck and hemiplegia

Calvin W Canan, Orkney Springs, Va, Baltimore Medical College, 1891, aged 65, was killed in February, when the automobile in which he was driving overturned

Howard Truman French $\oplus$ Deep River, Conn, Medical Department of Columbia College, New York, 1891, aged 64, died February 6, of coronary occlusion

George F Plew, Hymers Ind, Rush Medical College, Chicago, 1876, aged 82, died, February 17, of cerebral hemorrhage, nephritis and arteriosclerosis

John Thomas Loftus $\oplus$ Worcester, Mass, Harvard University Medical School, Boston, 1903, aged 63, died, February 4, of coronary embolism

Phebe Lininger, Springdale, Ark, Woman's Medical College, Kansas City, Mo, 1903, aged 77, died, February 5 of cerebral hemorrhage

Robinson Cox, Upper Stewiacke N S, Canada, Dalhousie University Faculty of Medicine, Halifax, 1875, aged 89, died, January 6

Jefferson R Huldrup, Windfall, Ind, Physio-Medical College of Indiana, Indianapolis, 1877, aged 86, died, February 5, of neuritis

Joel Cook, Orestes, Ind (licensed, Indiana 1897) health officer of Orestes for many years, aged 75, died, in February, of arteriosclerosis

Horace Curlin Hall, Laredo Texas University of Texas School of Medicine, Galveston, 1898, aged 57, died, February 2 of myocarditis

Robert Greenlee Baird, Sharon Pa Cleveland Medical College, Homeopathic, 1897, aged 64, died January 14, of heart disease

Albert John File, Ameliasburg, Ont Canada, Queen's University Faculty of Medicine, Kingston, 1869, aged 88, died January 6

Walter Clark Hovey, Nokomis, Ill Medical Department of Washington University, St Louis, 1897, aged 57, died, March 1

Charles O Linder, Spokane, Wash, Thomsonian Medical College, Allentown, Pa, 1905, aged 62, died, February 18

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted on request.

VITAMIN C VALUE OF LEMON AND OF LIME JUICE

To the Editor.—In reply to an inquiry as to the relative value in vitamin C of the lemon (*Citrus limonum*) and the lime (*Citrus medica*) in *Queries and Minor Notes* (THE JOURNAL January 24 p 291) you stated that according to Ragnar Berg (Die Vitamine Leipzig S Hirzel 1927 p 402) orange juice is richer than lime and this than lemon. If the general proposition advanced that the vitamin C content of fruits increases with sweetness is correct then the sweet lime and sweet lemon ought to be the richer ones in vitamin. During the World War I read a statement in the *Lancet* that fresh lime juice is far inferior to fresh lemon juice as an antiscorbutic also that historical inquiry had shown that lime juice reputed to be so valuable in arctic expeditions was really lemon juice. There seems to be a contradiction of claims.

M D Connecticut

ANSWER.—The corrective statement to which our correspondent has reference was published in a paper by Harriet Chick, L Margaret Hume Ruth F Skelton and Alice H Smith The Antiscorbutic Principle in Limes and Lemons (*Lancet* 2 735 [Nov 30] 1918). These investigators were attached to the Lister Institute of Preventive Medicine in London. In his treatise on Scurvy Past and Present (Philadelphia, J B Lippincott Company, 1920) Alfred F Hess referred to this historical inquiry as follows:

This sketch is of exceptional interest because it treats of the oldest and most cherished antiscorbutic and particularly because it has unearthed a peculiar fallacy in their connection. As they state there would appear to be every reason for believing that the use of so-called lime juice was responsible for the disappearance of scurvy from the British navy in the first decade of the nineteenth century. It would seem however that the lime juice which gained this great reputation in the navy some 125 years ago was in reality lemon juice and that it was not until about 50 years ago that lime juice was really used. These authors show—by one of those striking human experiments which occasionally is available—that in a polar exploration which was organized in 1850 lemon juice was issued to each man and that no case of scurvy developed whereas in a similar expedition which went out in 1875 lime juice was used and scurvy developed the following spring with great severity among the sledge crews. This investigation therefore seems to prove that lime juice the prototype of antiscorbutics has been recorded a false position that in reality the sailors of the past have been protected by lemon juice (p 149).

A history of the subject involving the use of lime juice and other antiscorbutic foods was published by Alice Henderson Smith A Historical Inquiry into the Efficacy of Lime Juice for the Prevention and Cure of Scurvy (*J Roy Med Corps*, February and March 1919). Some of the features of controversy are discussed by E V McCollum and Nina Simmonds The Newer Knowledge of Nutrition (New York, Macmillan Company). They point out that adulteration of lime juice has undoubtedly taken place in the past and that heretofore may have destroyed antiscorbutic potencies. In his recent book Professor Henry C Sherman of Columbia University has made comparison of the fresh juices of the orange, lemon and lime in the ratio of 100 100 25 (Sherman H C Food Products New York Macmillan Company 1924 p 414, Chemistry of Food and Nutrition, 1926 p 429). Thus the consensus of expert opinion is clearly against that of the German writer whose statement was accepted without further investigation.

REGENERATION OF PANCREATIC ISLANDS OF LANGERHANS

To the Editor.—In the December isue of *Hygiene* Dr B C H Harvey said on page 1138 in his article on human anatomy that in experimental animals ways have been found to make new islands grow. They are not so nearly perfected as to make them applicable to human beings but they are being tried out. Dr Harvey refers to the islands in the pancreas which create insulin. Will you kindly advise the name and location of the institution where the experiments are being made?

CARL G WILLIGS, Dallas, Tex

ANSWER.—Some of this work has been done in the University of Chicago in the department of anatomy. Accounts of it can be found in:

Grauer T P Regeneration in the Pancreas of the Rabbit *Am J Anatomy* November 1926
De Takat Geza Hannett Frances Hentley Dorothy and Sier I J Correlations of Internal and External Pancreatic Secretion *Arch Surg* 20 866 (May) 1930
Shields Warren Pathology of Diabetes Philadelphia 1930
Bensley Lectures of the Harvey Society New York February 1935

DISINFECTANTS

To the Editor — As head of the Wellington schools I am attempting to locate a satisfactory disinfectant. I find that the phenol coefficient values as given on commercial disinfectants do not give the information that is required for their intelligent use. Coefficients given, if not very carefully checked, are high on disease germs that are not prevalent in schools.

Would you kindly recommend to me the types of disinfectants most satisfactory for schools? We have had some experience with pine oil and have had highly recommended to us chlorine disinfectants.

What we wish is a disinfectant to be used for general school purposes. In other words we would like a disinfectant that we may spray in our halls, class rooms and lavatories that will kill disease germs that are prevalent among school children. We have epidemics of mumps, measles, chickenpox, scarlet fever, diphtheria, colds, influenza and numerous other childhood diseases. What we would like is something that would be of actual help in destroying these germs. We would be glad to know of solutions that we can put in our scrub water to use in our lavatories, urinals and toilet bowls. Likewise for the mopping of our toilet floors, shower baths and dressing rooms. We would be glad to have recommended something else if necessary to spray our class rooms and corridors with. I trust that this letter puts before you our problem. We are glad to spend money to cut diseases among our pupils. We feel however it is a waste of money to buy some disinfectants and use them for all types of school fumigation. If I have not yet been specific enough, won't you please pass direct questions so that I may answer them. This is truly a problem for school men and your association is certainly the one who, of all associations, should be able to help us.

A. M. McC

ANSWER — In combating contagion modern sanitary practices have eliminated disinfectants for spraying walls, ceiling and floors of school rooms. The source of infection is the individual, so long as the infected individual is present in the room, any disinfectant that might be used on the walls or the floor would be of little if any value in preventing infection. Removal of the infected individual usually suffices to end the danger of spreading the infection.

Soap and water is the best agent for cleaning floors, together with plenty of fresh air and sunshine. It is unnecessary to worry about contagious disease organisms that may be lodged on the walls or ceilings, the same rule applies to toilets and urinals. Cleanliness will take care of the whole problem without resort to strong disinfectants. In fact, terminal disinfection, such as fumigation with formaldehyde, has been generally discarded as valueless. In the case of lavatories, urinals and toilet bowls, so-called germicides in reality accomplish nothing except covering up the primary odor by the stronger odor of the chemical used.

"Disinfection of hands" may be obtained by a thorough scrubbing with soap and water. In laboratories in which pathologic material is being handled, a solution of mercuric chloride or a solution containing "compound solution of cresol" may be employed.

USE OF ANTITYPHOID VACCINATION FOR MEDICAL ATTENDANTS

To the Editor — To date I have held to earlier training that typhoid vaccine was not used for contacts and any one nurse or physician, caring for cases should not receive it during their attendance on cases. Is it now recognized therapy and if so on whose authority?

B. A. WINNE, M.D. Johnstown, N. Y.

ANSWER — Obviously, all reasonable efforts should be made to prevent typhoid infection in persons who are in special danger of such infection, and the injection of typhoid vaccine is the only reliable and effective means of prevention at hand. Whether the vaccine should be given during the attendance of a nurse or physician on cases of typhoid will have to be decided in each individual case. The only objection to giving the vaccine at such time would be the possibility that the recipient might be more or less ill in consequence, but such illness would be only temporary.

RELATION OF EYESTRAIN TO CATARACT

To the Editor — Will you kindly inform me whether eyestrain of an astigmatic condition, presbyopia, unequal in the two eyes and imbalance of ocular muscles resulting in moderate diplopia and with some cyclophoria might or in any probability would if uncorrected by glasses worn continuously for distant vision be apt to cause or hasten cataract in a person aged 52. Is there any real scientific evidence to support this idea or reasonable probability of it? Please omit name and address.

M.D. California

ANSWER — There is not one iota of scientific evidence that eyestrain, so called, due to uncorrected errors of refraction or imbalance of ocular muscles will cause or hasten the maturity of cataract of any sort in any individual of any age. It was a common belief among the older American school of refractionists that accurate correction of errors of refraction retarded the maturity of incipient cataract, but the belief was not founded on scientific evidence.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

AMERICAN BOARD FOR OPHTHALMIC EXAMINATIONS Philadelphia, June 8, 1931. Denver, July 23, 1931. Sec., Dr. William H. Wilder, 122 S. Michigan Ave. Chicago, Ill.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Philadelphia, June 6, 1931. Sec., Dr. Paul Titus, 1015 Highland Bldg. Pittsburgh, Pa.

ARIZONA Phoenix April 7, 1931. Sec., Dr. H. P. Mills, 14 N. Central Ave. Phoenix, Ariz.

ARKANSAS Little Rock, May 4, 1931. Basic Science. Sec., Mr. Louis Gehlauer, 1002 Donaghy Bldg., Little Rock, Ark. Homeopathic. Eureka Springs, May 12, 1931. Sec., Dr. Allison A. Pringle, Eureka Springs, Ark. Regular. Little Rock, May 12, 1931. Sec., Dr. S. J. Albright, Searcy, Ark. Eclectic. Little Rock, May 12, 1931. Sec., Dr. Claude E. Law, 803 1/2 Garrison Ave. Fort Smith, Ark.

COLORADO Denver April 7, 1931. Dr. W. W. Williams, 224 State Capitol Bldg. Denver, Colo.

IDaho Boise April 7, 1931. Comm., Mr. Emmitt Pfost, Boise, Idaho. Ill. ois Chicago April 7, 1931. Supt., Mr. P. B. Johnson, Springfield, Ill.

MINNESOTA Minneapolis Regular April 21, 23, 1931. Sec., Dr. E. J. Enghberg, 524 Lowry Bldg. St. Paul, Minn. Basic Science April 7, 1931. Sec., Dr. E. T. Bell, 110 Anatomy Bldg. University of Minnesota, Minneapolis, Minn.

MONTANA Helena April 7, 1931. Sec., Dr. S. A. Cooney, Power Block, Helena, Mont.

NEVADA Carson City, May 4, 1931. Sec., Dr. Edward E. Hamer, Carson City, Nev.

NEW MEXICO Santa Fe April 13, 14, 1931. Sec., Dr. W. T. Joyner, 2021 First National Bank Bldg. Roswell, N. M.

RHODE ISLAND Providence April 23, 1931. Dir., Mr. L. A. Round, 319 State Office Bldg. Providence, R. I.

TENNESSEE Memphis March 30, 31, 1931. Sec., Dr. A. B. DeLoach, Medical Arts Bldg. Memphis, Tenn.

WISCONSIN Milwaukee April 14, 1931. Reciprocity Applications. Sec., Dr. R. E. Flynn, 315 State Bank Bldg., La Crosse, Wis.

New Jersey October Examination

Dr. James J. McGuire, secretary of the Board of Medical Examiners of New Jersey, reports the written examination held at Trenton, Oct. 21-22, 1930. The examination covered 9 subjects and included 90 questions. An average of 75 per cent was required to pass. Nineteen candidates were examined, 18 of whom passed and 1 failed. The following colleges were represented:

College	PASSED	Year Grad	Per Cent
Georgetown University School of Medicine	(1929)	80.2	
George Washington University Medical School	(1929)	85.8	
Tulane University of Louisiana School of Medicine	(1929)	86.3	
Boston University Medical School	(1926) 80.5	83.5	
Harvard University Medical School	(1929)	80.2	
Tufts College Medical School	(1929)	80.2	
Columbia University College of Phys and Surgs	(1929) 84.2	86.2	
Jefferson Medical College	(1929)	81.7	
Temple University School of Medicine	(1929)	82.5	
University of Pennsylvania School of Medicine	(1928)	83.6	
McGill University Faculty of Medicine	(1930)	90	
Queen's University Faculty of Medicine	(1929)	79.6	
University of Naples Faculty of Medicine	(1927)	75	
Osteopaths	75.4, 82	85.4	
College	FAILED	Year Grad	Per Cent
University of Rome Faculty of Medicine	(1926)	59.2*	

Dr. McGuire also reports 79 physicians licensed through reciprocity with other states and 12 by the endorsement of credentials from Aug. 1 to Dec. 31, 1930. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad with	Reciprocity
University of Arkansas School of Medicine	(1929)	Arkansas	
Georgetown University School of Medicine	(1929)	New York	
(1917) District of Columbia			
George Washington University Medical School	(1929)	New York	
Howard University School of Med	(1925) W. Va.	(1929)	Virginia
University of Louisville School of Medicine	(1914)	(1914)	Kentucky
Tulane University of Louisiana School of Medicine	(1929)	(1929)	Louisiana
Bowdoin Medical School	(1918)	(1918)	Maine
College of Physicians and Surgeons, Baltimore	(1906)	(1906)	Maryland
University of Maryland School of Medicine	(1929)	(1929)	Maryland
(1928) (1929-4) New York			
Boston University School of Medicine	(1911)	(1911)	New Hamp
Tufts College Medical School	(1928)	(1928)	Mass
(1915) (1928) (1929) New York			
University of Michigan Med Sch	(1923)	(1923)	New York
University of Minnesota Medical School	(1930)	(1930)	Minnesota
St. Louis University School of Medicine	(1915)	(1915)	Kentucky
(1924) Iowa (1929) Missouri (1928) (1929) New York			
Albany Medical College	(1927)	(1927)	New York
Columbia Univ. College of P & S	(1895) (1928 2)	(1929)	New York
Cornell University Med School	(1927 2) (1928 2)	(1929)	New York
Long Island College Hospital	(1923) (1927)	(1929)	New York
New York Homeo. Med. College & Flower Hosp	(1929 2)	(1929)	New York

Syracuse University College of Medicine	(1929, 2)	New York
University and Bellevue Hospital Medical College	(1911) (1921) (1926) (1928) (1929, 6)	New York
University of Buffalo School of Medicine	(1929)	New York
Hahnemann Medical College of Philadelphia	(1927)	Ohio
(1917) (1921) (1923) Pennsylvania		
Jefferson Medical College	(1906) (1918) (1926 2)	Penn
(1929) New York		
University of Pennsylvania School of Medicine	(1929) N	Carolina
(1920) Pennsylvania, (1923) N	(1920)	New York
Memphis Hospital Medical College	(1909)	Tennessee
University of Vermont College of Medicine	(1928)	New York
Medical College of Virginia	(1916)	New York
University of Virginia Department of Medicine	(1927)	Virginia
Laval University Faculty of Medicine	(1929)	New York
Queen's University Faculty of Medicine	(1927)	New York
University of Brussels Faculty of Medicine	(1923)	New York

College	Year	Endorsement
Yale University School of Medicine	(1925)N	B M Ex
Tufts College Medical School	(1927)N	B M Ex
Washington University School of Medicine	(1928)N	B M Ex
University of Nebraska College of Medicine	(1925)N	B M Ex
Columbia Univ Coll of P & S	(1927 2) (1928)	(1929)N B M Ex
Cornell University Medical College	(1926) (1928)N	B M Ex
Woman's Medical College of Pennsylvania	(1922) (1927)N	B M Ex

* Verification of graduation in process

Book Notices

CLINICAL ALLERGY PARTICULARLY ASTHMA AND HAY FEVER MECHANISM AND TREATMENT By Francis M Rackemann M.D. Physician to the Massachusetts General Hospital Boston. Cloth. Price \$10.50. Pp 617 with 30 illustrations. New York: Macmillan Company 1931.

Allergy as a specialty in scientific medicine is comparatively new. Our knowledge of the subject is almost wholly a matter of the twentieth century. The rapid increase in this knowledge makes almost any textbook obsolete with the date of publication. Actually, however, but few textbooks have thus far been available, notably, the books by Brown, Balyeat and Duke. It is doubtful whether any of these has endeavored to handle the subject with the completeness from the point of view of medicine as a whole that is revealed in Rackemann's contribution. The book bears an excellent introduction by Hans Zimsser and the series of which it is a part has had the editorial supervision of Minot.

The point of view toward allergy has gradually changed from emphasis on an immunologic background to a biochemical conception. It seems possible that the early emphasis on immunology did more to confuse the matter in the mind of the practitioner than it did to aid him. Dr Rackemann's contribution is planned primarily for the clinician. True, it offers an historical survey of the subject and a theoretical background, but it steps promptly into practical considerations of the chemistry of hypersensitivity, to immunology, and the possibility of desensitization. Dr Rackemann considers the various theories as to the nature and origin of allergy. He emphasizes the fact that normal man is sensitized with difficulty but that allergic individuals become sensitized with greater ease.

It is not yet understood just why some people become allergic at certain ages, but undoubtedly injections may offer opportunity for sensitization, heredity may play some part through the establishment of defects in constitution, and the nature of the response may be associated with the nature of the primary cause. Thus one person develops asthma, another hay-fever, a third urticaria, although all are sensitive to essentially the same proteins.

Dr Rackemann has collected carefully the entire literature on the subject, has organized it and has systematized it in such a way that the development of the knowledge is clear. In chapter IX he emphasizes the five definite characteristics of allergic individuals.

1 The presenting symptom whether asthma hay fever urticaria eczema angioneurotic edema migraine and perhaps other disorders is characteristic of the group.

2 Evidence of some other allergic symptom in the past or present history is usually at hand.

3 An inheritance of allergy can be identified in about one half the cases.

4 Positive skin tests are frequently elicited.

5 A blood eosinophilia when found is confirmatory (provided other causes of eosinophilia are excluded).

From this point on the book becomes wholly practical and therefore of special value to the practicing physician. The diagnosis, the clinical manifestations and the treatment of

allergic conditions are fully set forth. Numerous examples and case reports enliven the text. The book is exceedingly readable. It is printed in good type and concludes with a discussion and summary, an appendix which provides an alphabetical list of proteins, besides pollens, which may produce allergic manifestations, and a collection of nostrums for asthma with their content. An excellent index completes the book. A monograph of this type represents the most valuable of modern contributions to medical literature. Here is made available present knowledge of a highly technical subject in understandable form, properly systematized and useful.

HANDBUCH DER MIKROSKOPISCHEN ANATOMIE DES MENSCHEN Herausgegeben von Wilhelm v. Mollendorff. Band VI. Blutgefäss und Lymphgefässapparat. Atmungsapparat und innersekretorische Drüsen. Teil I. Blutgefässe und Herz. Lymphgefässe und lymphatische Organe. Milz. Bearbeitet von A. Benninghoff, A. Hartmann und T. Hellman. Paper. Price 148 marks. Pp 554 with 299 illustrations. Berlin: Julius Springer 1930.

This volume includes topics that enter into almost every histologic study and covers fields in which great progress has been made in recent years. The chapter on the blood vessels and heart is by Benninghoff; that on the lymphatic vessels and tissues by Hellman; and that on the spleen by Hartmann. All three authors are active workers in their respective fields, have a physiologic point of view and present a mass of well organized material including numerous new observations particularly on human material. The detailed and critical reviews of the literature are exhaustive at least so far as the German literature is concerned. The evaluation of the cytologic criteria of differentiating types of cells is occasionally open to question but in most such cases further experimental work will be necessary to establish cell relationships. The great variability in the structure and functions of the spleen in different vertebrates has been a source of confusion in the past and all experimental workers will welcome the presentation of the comparative histology which is based on a wide first hand knowledge.

DEEP X-RAY THERAPY IN MALIGNANT DISEASE. A Report of an Investigation Carried out from 1924-1929 under the Direction of the St. Bartholomew's Hospital Cancer Research Committee. By Walter M. Levitt, M.B., D.M.R.L. Medical Officer in Charge of the Radiotherapeutic Research Department. With an introduction by Sir Thomas Horler, K.C.V.O., M.D., F.R.C.P., Chairman of the Cancer Research Committee. Cloth. Pp 128 with 10 illustrations. London: John Murray 1930.

Although prepared by Dr Levitt, medical officer in charge of the radiotherapeutic research department of St. Bartholomew's Hospital, this report of the results of high voltage roentgen therapy in malignant disease during the past five years has the endorsement of the Cancer Research Committee, the members of which cooperated in the selection and subsequent observation of cases. The investigation was restricted to four groups corresponding to the four groups of cases in which research on radium treatment was being carried out: (1) malignant disease of the breast; (2) malignant disease of the uterus (cervix, vagina and vulva); (3) malignant disease in the upper air passages (mouth, nose, larynx, pharynx and accessory sinuses); (4) malignant disease of the esophagus. Two other groups were added in 1925 and 1928 respectively: (5) malignant disease of the rectum; and (6) malignant disease of the thyroid gland. As far as possible, the cases were selected and followed up by the same observer, one or two members of the committee being delegated to have charge of each group of cases. The total number of cases included in the investigation was 327; in only a small proportion of which the patient failed to return, the follow up examinations were made at intervals of three weeks for six months after treatment if the patients did not live at a great distance, or at intervals of one or two months when they lived at too great a distance. In the latter examination at more frequent intervals by the local physician was required. For various reasons a biopsy was omitted in thirty cases. A complete blood count was carried out before and from time to time during and after treatment. Roentgenographic examination of the lungs and mediastinum was carried out in all cases of carcinoma of the breast, all cases of disease of the upper air passages presenting enlarged subglottic glands, all cases of carcinoma of the esophagus, and all cases of sarcoma. In most of the patients the disease was relatively advanced but, with a few exceptions obviously more

bund or markedly cachectic patients were excluded. In all cases except those of sarcoma the object of the treatment was to secure a quantity of radiation of not less than 100 per cent and not more than 120 per cent of the erythema dose uniformly distributed throughout the region involved in the disease and the associated glandular areas.

In the great majority of cases a remarkable improvement in the general condition of the patient followed the treatment, even when the size of the growth did not diminish. In the fifty cases included in the breast group the disease usually was advanced and inoperable, the more favorable cases being treated with radium. This must be taken into account in evaluating the results. Of the ten cases treated by the single massive dose method, improvement was noted in only two, and the growth did not disappear in any case. Of the twenty-eight cases treated by the split, or fractional dose method the growth disappeared completely in eight cases. The forty-eight cases in the uterus group included some that were operable. Some were treated with roentgen rays exclusively and others with roentgen rays and radium. In some of the latter the roentgen treatment preceded the radium treatment, whereas in others the radium was used first. Of the sixteen cases of carcinoma of the cervix treated by roentgen rays only the disease disappeared completely in six cases, as well as in six other cases in which the intended radium treatment had not yet been applied. In eight cases in which the tumor disappeared after roentgen treatment alone, recurrence appeared later but improvement in these cases was again observed after radium treatment. In four of the six cases of carcinoma of the body of the uterus treated by roentgen rays exclusively all evidence of disease disappeared and two patients were still well after four years. Among the 170 cases of malignant disease of the upper or passages four of seven carcinomas and two endotheliomas of the palate were apparently cured. An apparent cure was obtained also in three of seven cases of sarcoma of the pharynx. In carcinoma of the tonsil, the results were uniformly bad. Complete disappearance of the malignant growth also was obtained in three of eleven cases of postcricoid carcinoma. Of the 132 cases treated with roentgen rays alone, all signs of disease disappeared in 15 per cent. Of the thirty-eight cases treated with roentgen rays and radium, all evidence of disease disappeared in 17 per cent. In the rectal and esophageal cases the results were not promising. Of the 319 cases of all groups, 15 per cent were free from evidence of disease at the time of the report, about 56 per cent derived substantial benefit and in 29 per cent the malignant process was not appreciably influenced.

This summary gives but a faint idea of the many points covered by the report. The technique employed, the reasons that led to the selection of technique, the methods of combining roentgen rays and radium, and the relative value of the single and fractional dose methods are clearly described and sanely discussed. The numerous statistical tables are admirably arranged. This may be regarded as a model of what such a report should be and will be invaluable to radiologists, surgeons and practitioners. Dr. Levitt deserves much credit for its preparation.

CLINICAL AND EPIDEMIOLOGICAL OBSERVATIONS ON TROPICAL TYPHUS IN THE FEDERATED MALAY STATES. By Raymond Leithwaite. *Bulletins from the Institute for Medical Research, Federated Malay States No. 1 of 1930.* Paper. Pp. 42. Kuala Lumpur: Malay States Government Printing Office, 1930.

EXPERIMENTAL TROPICAL TYPHUS IN LABORATORY ANIMALS. By Raymond Leithwaite. *Bulletins from the Institute for Medical Research, Federated Malay States No. 3 of 1930.* Paper. Pp. 10. Kuala Lumpur: Federated Malay States Government Printing Office, 1930.

This is a study of 164 cases of tropical typhus (so called by Fletcher and Lesslar, *Bull. Inst. M. Research*, Kuala Lumpur, F. M. S., 1925, number 2) occurring in the Federated Malay States from January 1927, to April, 1929. Of this series 154 were of the K type (rural) and 10 of the W type (urban). Clinically the two types are identical and resemble exanthematic typhus. The clinical and serologic manifestations are given which make possible a differentiation from tsutsugamushi disease, leptospirosis and typhoid. The serum of the urban type agglutinates indologenic strains of *Proteus* X 19 but not the anindologenic strains. Serum of the rural type agglutinates the anindologenic but not the indologenic strains of *Proteus* X 19. Epidemiologically, the W cases occur mainly among indoor

workers, whereas the K cases occur among those working or living in the countryside. The disease is nonseasonal and non-louse borne but has a clear occupational distribution. The W form occurs in those with diverse indoor occupations. The K form occurs in workers on plantations, in cowherds or bullock cart drivers, and in pruners of oil palms. Various conjectures are made relative to the possible vectors of the disease. It would seem that the epidemiology of transmission most resembles that of tsutsugamushi.

Inoculations of blood from patients suffering from tropical typhus were made to guinea pigs, rats and rabbits. Only five of the sixty-two guinea-pigs showed febrile reactions. The features of these reactions correspond with those in experimental exanthematic typhus but do not present so definite a course as the latter. Blood from sixty-two patients between the fourth and the eighth days of fever was inoculated into eighty-seven rats (*Rattus rattus-diardi*). There was a rise in temperature in twenty-three of these rats. Inoculations of emulsions of brain, spleen and kidney of those rats showing the most definite febrile reactions were made to other rats and to guinea pigs. Of 148 rats thus inoculated, 37 gave febrile reactions. It is concluded that the virus of tropical typhus is transmissible to rats, but with inconstant successful infections. Two of eleven rabbits inoculated with patient's blood gave positive Weil-Felix reactions.

LAUSCULTATION DANS LE DIAGNOSTIC DE LA TUBERCULOSE PLEURO-PULMONAIRE. Par René Burnand. Préface du Professeur F. Bezançon. Paper. Price, 40 francs. Pp. 195 with 51 illustrations. Paris: Masson & Cie, 1930.

This careful work on physical diagnosis carries a preface by Professor Bezançon who voices a protest, which seems to be as necessary in France as it is in America, against the tendency of many medical men to place a high value on roentgen diagnosis to the exclusion—or limitation—of careful stethoscopy. Burnand considers that the medical profession has forgotten the finer distinctions of physical sign description developed by our elders in the art. He admits that perhaps briefer and broader formulas have been gained but thinks that while these attain a greater simplicity they fail in large measure to mirror correctly the realities. It is necessary, therefore, to revive and reform our stethoscopy as well as to restate our conceptions. Nevertheless, Burnand would in no degree deprecate the use of the x-ray film. Laboratory methods are of inestimable value but should not be accorded full superiority in diagnosis. The author has gone deeply into his subject and has brought the text in excellent contact with the illustrations. Much attention is given to the various aspects of pulmonary tuberculosis and its complications. The book is noteworthy among the many recent publications on the subject of physical diagnosis.

MICROBIOLOGY AND ELEMENTARY PATHOLOGY FOR THE USE OF NURSES. By Charles G. Sinclair, B.S., M.D., Major, Medical Corps, U. S. Army. Cloth. Price \$2.50. Pp. 362 with 102 illustrations. Philadelphia: F. A. Davis Company, 1931.

The book deals with general microbiology, 228 pages, laboratory exercises in microbiology, 20 pages, and elements of pathology, 106 pages. The presentation is clear and simple. The information impresses one as well selected and it is reliable. The length of the different parts is well adjusted to the time available in the standard courses for nurses. The book, which is the outcome of the author's experience in teaching nurses, will be a valuable help to student nurses and a good guide for instructors of nurses in microbiology and pathology.

A CHART TO ILLUSTRATE THE HISTORY OF BIOCHEMISTRY AND PHYSIOLOGY. By Joseph Needham. Paper. Price, 10/6. Two charts. Cambridge: The Author [n.d.].

This chart represents a quick reference history not only of physiology and biochemistry but also of anatomy, chemistry, science and philosophy. There is a brief description of earlier medicobiologic science, and individual references to prominent investigators who lived between 1400 and 1900. For each man one finds easily the years of his birth and death, the place where he worked, the nature of his contributions to his particular branch of biology and the names of his teachers and pupils. The chart may be recommended to every one interested in the history of biology and medicine and should be hanging on the wall in every physiologic and biochemical teaching or research laboratory.

Medicolegal

Sarcoma of a Bone Attributed to Trauma

(Halper *The Golden Rule (Minn.)* 231 N W 195)

Minnie Halper, a clerk in the Golden Rule Department Store, Oct 23, 1928, was carrying a box weighing 44 pounds. It fell and struck her on the inner side of her leg, "just below the point of the knee." The blow left a red mark, which turned blue and black. Her leg pained her for a few days, and then apparently it seemed normal. A few weeks later the leg pained her again and began to swell at the place of the injury. December 29, she complained of the pain, to the nurse in the hospital or rest room at her place of employment whom she had occasion to consult about another ailment. She did not associate it, however, at that time, with the injury she had suffered, nor did she do so until after the physician whom she first consulted, February 2, questioned her. Roentgenograms taken after that consultation showed that the bone was affected. An incision was made, February 10, and material was removed for microscopic examination. One pathologist thought that the examination disclosed a sarcoma, the other thought that it did not. Another examination, March 13, resulted in a definite diagnosis of sarcoma. The leg was amputated, April 17, three inches above the knee. The industrial commission awarded compensation for the loss of the leg. The employer and its insurance carrier brought the case by writ of certiorari to the Supreme Court of Minnesota.

The medical witnesses agreed, said the Supreme Court, that no one knows positively what causes sarcoma or whether it may result from trauma. One physician testified that in a majority of sarcoma cases there had been a previous, comparatively trivial injury, the effects of which passed away, only to be followed by a sarcoma. Another testified that a large percentage of patients having sarcomas give histories of previous trauma. Both believed that the sarcoma in the present case resulted from the injury. The sarcoma developed in the exact point of the injury, and there was nothing to indicate any other cause. In the opinion of the Supreme Court, the evidence justified the industrial commission in inferring that the sarcoma resulted from the injury. The order of the commission was therefore affirmed.

Practice of Medicine by a Barber, Entrapment

(Piper v State (Wis.) 231 N W 162)

An inspector for the board of medical examiners called at Piper's barber shop. He was invited into a rear room, having a sign "Office" on its door. The inspector told Piper that he understood that he, Piper, was "handling venereal diseases" and that he desired treatment. Piper asked several questions as to his supposed patient's symptoms. He then made a diagnosis of "prostate gland trouble" and said that if the disease was not handled correctly a cancer might develop. Piper's remedy was to rub a liquid preparation of his own on the back and permit the resulting blisters to remain on seven days, using pork lard and ordinary cotton batting when the pain became too severe. This treatment, he stated, would produce a sort of localized smallpox, which would drive the poison germs out of the system and keep the disease from spreading. Piper then sold to the inspector a bottle of medicine for which he charged five dollars. He was convicted of practicing medicine without a license and appealed to the Supreme Court of Wisconsin.

One of the grounds on which Piper based his appeal was that the inspector had entrapped him and that the deceit used rendered inadmissible the inspector's testimony. Merely setting a trap to catch a would-be criminal said the Supreme Court, by affording him the freest opportunity to commit an offense does not sacrifice any element of the offense. *Topolucki v State* 130 Wis 244, 109 N W 1037 7 L R A (N S) 756 118 Am St Rep 1019, 10 Ann Cas 627. The fact that a party against whom a crime is contemplated suggests and encourages or sets a trap for the accused, is not a defense where the accused has done every act essential to the completion of the offense. *Kosack v State*

160 Wis 255, 152 N W 181. In the present case, continued the court, the inspector did nothing to relieve Piper from any element of the offense. The conduct of Piper, not the motive or the deception of the inspector, must be considered. The judgment of the lower court was affirmed.

Society Proceedings

COMING MEETINGS

Alabama Medical Association of the State of Birmingham April 21-24
Dr D L Cannon 519 Dexter Avenue Montgomery Secretary
American Association for the Study of Gonorrhea Kansas City Mo April 7-9
Dr J R Yung 670 Cherry Street Terre Haute Ind Secretary
American Association of Anatomists Chicago April 2-4 Dr George W
Corner University of Rochester School of Medicine Rochester N Y,
Secretary
American Association of Pathologists and Bacteriologists Cleveland
April 2-3 Dr H T Karsner 2085 Adelbert Road Cleveland Secy
American Gastroenterological Association Atlantic City May 4-5 Dr
Charles G Lucas 307 West Broadway Louisville Secretary
American Gynecological Society Hot Springs Va May 18-20 Dr
Floyd E Keene 133 South 36th Street Philadelphia Secretary
American Orthopedic Association Memphis Tennessee April 15-18 Dr
DeForest P Willard 1916 Spruce Street Philadelphia Secretary
American Pediatric Society Edgewater Park Mississippi April 15-17
Dr H C Carpenter 1805 Spruce Street Philadelphia Secretary
American Physiological Society Montreal April 8-11 Dr Arno B
Luckhardt 5216 Greenwood Avenue Chicago Secretary
American Society for Clinical Investigation Atlantic City May 4 Dr
Cyrus C Sturgis Simpson Memorial Institute Ann Arbor Mich Secy
American Society for Experimental Pathology Montreal April 9-11 Dr
C Phillip Miller Jr University of Chicago Department of Medicine
Chicago Secretary
American Society for Pharmacology and Experimental Therapeutics
Montreal April 8-11 Dr E D Brown University of Minnesota
Medical School Minneapolis Secretary
American Society of Biological Chemistry Montreal April 8-11 Dr
H B Lewis University of Michigan Medical School Ann Arbor
Mich Secretary
American Urological Association Memphis Tenn May 19-22 Dr
Gilbert J Thomas 1009 Nicollet Avenue Minneapolis Secretary
Arizona State Medical Association Nogales May 7-9 Dr D F
Harbridge Coodrich Building Phoenix Secretary
Arkansas Medical Society Texarkana April 21-24 Dr William R
Bathurst Boyle Building Little Rock Secretary
Association of American Physicians Atlantic City May 5-6 Dr James
H Means Massachusetts General Hospital Boston Secretary
California Medical Association San Francisco April 27-30 Dr Emma
W Pope 450 Sutter Street San Francisco Secretary
Conference of State and Provincial Health Authorities of North America
Washington D C April 29-30 Dr A J Chesley State Board of
Health St Paul Minnesota Secretary
Connecticut State Medical Society Bridgeport May 20-21 Dr Charles
W Comfort Jr 27 Elm Street New Haven Secretary
District of Columbia Medical Society of Washington May 6 Dr
C B Conklin 1718 M Street N W Washington Secretary
Federation of American Societies for Experimental Biology Montreal
April 8-11 Dr H B Lewis University of Michigan Medical School
Ann Arbor Mich Secretary
Florida Medical Association Orlando May 11-12 Dr Shaler Richardson
111 West Adams Street Jacksonville Secretary
Georgia Medical Association of Atlanta May 12-15 Dr Allen H
Bunce 139 Forrest Avenue N E Atlanta Secretary
Hawaiian Territorial Medical Association Wailuku Maui May 1-2 Dr
F J Pinkerton Young Building Honolulu Secretary
Illinois State Medical Society East St Louis May 5-7 Dr Harold M
Camp Lahl Building Monmouth Secretary
Iowa State Medical Society Des Moines May 13-16 Dr Robert I
Parker 3510 Sixth Avenue Des Moines Secretary
Kansas Medical Society Manhattan May 5-7 Dr J T Hutton
Building Kansas City Secretary
Louisiana State Medical Society New Orleans April 14-16 Dr P T
Talbot 1430 Tulane Avenue New Orleans Secretary
Maryland Medical and Surgical Faculty of Baltimore April 28-30
Dr John T King Jr 1211 Cathedral Street Baltimore Secretary
Medical Library Association New Orleans May 19-21 Mrs Sue Lethman
General Library University of Michigan Ann Arbor Mich Secretary
Minnesota State Medical Association Minneapolis May 4-6 Dr I A
Meyerding 11 West Summit Avenue St Paul Secretary
Mississippi State Medical Association Jackson May 12-14 Dr T M
Dye Clarkdale Secretary
Missouri State Medical Association Joplin May 11-14 Dr F J
Goodwin 634 North Grand Boulevard St Louis Secretary
National Tuberculosis Association Syracuse N Y May 11-14 Dr
Charles J Hatfield Henry Hippis Institute Philadelphia Secretary
Nebraska State Medical Association Omaha May 12-14 Dr R B Allen
Center McKinley Building Lincoln Secretary
New Hampshire Medical Society Manchester May 19-20 Dr D I
Sullivan 7 North State Street Concord Secretary
New Mexico Medical Society Albuquerque May 10-12 Dr L I
Cohenour 219 West Central Avenue Albuquerque Secretary
North Carolina Medical Society of the State of Durham April 20
Dr L B McBrayer Southern Pine Secretary
Ohio State Medical Association Toledo May 1-13 Mr D A H Mart
131 East State Street Columbus Secretary
Oklahoma State Medical Association Oklahoma City May 11-13 Dr
C A Thompson Memorial State Museum Secretary
South Carolina Medical Association Greenville May 6-8 Dr I A
Hume Seneca Secretary
Tennessee State Medical Association Knoxville April 14-16 Dr H H
Shoulder 208 Church Street Nashville Secretary
Texas State Medical Association of El Paso May 5-7 Dr H
Taylor Medical Art Building Fort Worth Secretary
West Virginia State Medical Association Charleston May 19-21
J W Savage 193 Wolfe Hall 11th Charl Secretary

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American Journal of Hygiene, Baltimore

13 1361 (Jan) 1931

- Pernicious Malaria E Marchatava Rome—p 1
Natural Disappearance of Malaria in Certain Regions of Europe L W Hackett and A Missiroli Rome—p 57
Complement Fixation in Yellow Fever in Monkey and in Man G E Davis Baltimore—p 79
Yellow Fever in Senegal Epidemics of 1926 and 1927 G H Ramsey Baltimore—p 129
Bacilli of Genus Hemophilus A and V Growth Factors Under Aerobic and Anaerobic Conditions L R Anderson Baltimore—p 164
Epizootic Encephalitis of Foxes II General Consideration of Fur Range Epizootics R C Green Minneapolis—p 201
Prolonged Exposure of Siliceous Spicules of Fresh Water Sponge to Action of Animal Tissues Contribution to the Pathogenesis of Silicosis in Man R G Mills Rochester Minn—p 224
Ventilation and Respiratory Illness in New York Schools Comparison of Window Gravity Ventilation and Unit Fan Ventilation with Varying Air Flow R Cole D D Kimball F S Ice G T Palmer E B Phelps E L Thorndike and C E A Winslow—p 235
Ultraviolet Radiation and Resistance to Infection Intranasal Infection with Pneumococcus and with Bacterium Epistemicum in Rabbit M Hardy and J Chapman Baltimore—p 255
Cultivation of Balañtidium Coli E Schumaker Baltimore—p 281
Merthiolate as Germicide H M Powell and W A Jamieson Indianapolis—p 296
Human Trichinella Spiralis Infections and Bachman Precipitin Test G W Hunter III Middletown Conn—p 311
Resistance of Chickens to Parasitism Affected by Vitamin A J E Ackert M T McIlvaine and N Z Crawford Manhattan Kan—p 320
Resistance of Chickens to Parasitism Affected by Vitamin B J E Ackert and L O Nolf Manhattan Kan—p 337
New Anopheline Mosquito from Para Brazil N C Davis Bahia Brazil—p 345
Relation of Temperature and Humidity to Course of a B Enteritidis Infection in White Mice I J Kligler and L Olitzki, Jerusalem—p 349

American Journal of Tropical Medicine, Baltimore

11 175 (Jan) 1931

- Efforts to Transfer Monkey Malaria to Man H C Clark and L H Dunn Panama—p 1
Progress in Survey for Blood Parasites of Wild Monkeys of Panama H C Clark Panama—p 11
Yellow Fever in South America Attempts to Transmit Virus with Certain Aedine and Sabethine Mosquitoes and with Triatomas N C Davis and R C Shannon Bahia Brazil—p 21
Transmission of Yellow Fever Possibility of Immunity in Stegomyia Mosquitoes N C Davis Bahia Brazil—p 31
Human Infestations with Liver Fluke (Clonorchis Sinensis) Z Berco vitz Andong Korea—p 43
Hydatid Cyst of Brain R H Goodale Worcester Mass—p 61
Treatment of Nasal Passages and Eyes with Chaulmoogra Oil in Leprosy T J Dimitry New Orleans—p 65

Delaware State Medical Journal, Wilmington

3 120 (Jan) 1931

- Suppurations Within Chest A M Shipley Baltimore—p 1
*Treatment of Abortions G Metzler Bridgeville—p 6

Treatment of Abortions—Metzler believes that the present-day treatment in febrile cases of abortion seems to be tending toward the conservative methods. In absence of severe hemorrhage the expectant treatment is continued until the temperature has remained normal for five or six days. While this procedure seems to produce the best results in the majority of febrile cases there are instances in which emptying of the uterus markedly shortens the febrile state. In septic cases in which the cervix is open and there is a foul mass of necrotic tissue retained in the uterus, removal with as little instrumentation as possible followed with iodoform packing seems to lead to rapid recovery. Cases of general septicemia appear to yield only to the expectant form of treatment which is the one

used almost entirely. The tendency seems to be toward placing more importance on the prophylactic treatment of abortions than was formerly done and toward conservative methods of treatment in the majority of cases, yet varying from these in certain isolated cases.

Kansas Medical Society Journal, Topeka

32 136 (Jan) 1931

- Tuberculosis of Mesenteric Lymph Glands M B Miller Topeka—p 1
Diabetes Mellitus B P Smith Neodesha—p 4
Visit to Medical Clinics in Europe C A Hellwig Wichita—p 10
Mortality from Enlarged Prostate in Marine and in Inland Localities E H S Bailey Lawrence Kansas City—p 14
Eye Injuries L A Jatur Alexander—p 18

Kentucky Medical Journal, Bowling Green

29 164 (Jan) 1931

- Chronic Purulent Otitis Media H G Reynolds Paducah—p 12
Chronic Suppurative Otitis Media with Complications W R Pryor Louisville—p 18
Malaria Therapy in Paresis H B Scott Louisville—p 19
Nonmalignant Tumors of Breast J D Northcutt Covington—p 24
Malignant Tumors of Breast E C Walter Mayfield—p 25
Injuries to Eye C V Heistand and W B Atkinson Campbellsville—p 31
Jackson Operation for Prolapsus Uteri M Thompson Louisville—p 38
Acute Osteomyelitis S C Smith Ashland—p 39
Osteogenesis Imperfecta Fragilitas Ossium or Brittle Bones R T Hudson Louisville—p 45
Nevus Pigmentosus Pilaris W J Young Louisville—p 46
Modern Prostatectomy C Hill Louisville—p 48

Ohio State Medical Journal, Columbus

27 196 (Jan) 1931

- Clinical Picture of Undulant Fever W M Simpson Dayton—p 21
Nephroptosis P G Smith G F McKim and T W Rush Cincinnati—p 27
Intranasal and Aural Infections in Children H G Beatty Columbus—p 31
Neurologic Principles Underlying Treatment of Muscular Atrophy H C Stevens Cleveland—p 35
Management of Chronic Pelvic Infection in Women L O Baumgardner Cleveland—p 39

27 97 184 (Feb) 1931

- Accidents and Sequelae in Intravenous Use of Arsenicals C I Cummer Cleveland—p 117
*Chronic Ulcerative Colitis Surgical Treatment in Refractory Cases E R Ann Dayton—p 121
Treatment of Chronic Suppurative Otitis Media G M Coates Philadelphia—p 128
Renal Rickets A G Mitchell and G M Guest Cincinnati—p 134
Changes in Course of Dementia Paralytica Under Malarial Therapy L W Yule Wooster—p 139
*Health Hazards in Chromium Plating J Blair Cleveland—p 142

Ulcerative Colitis—According to Arn, the majority of patients with chronic ulcerative colitis will respond favorably to medical treatment. Surgical intervention should not be contemplated until medical treatment has been given a thorough trial. In five cases of advanced chronic ulcerative colitis, which were refractory to the usual forms of medical treatment, clinical cures were obtained by ileosigmoidostomy, followed by daily colonic irrigations.

Health Hazards in Chromium Plating—Blair states that there is no evidence, from the literature or otherwise, that any injury arising from contact with chromic acid solution or spray in chromium plating develops into a constitutional disease. The ulceration and perforation of the nasal septum as well as the formation of chrome sores on other parts of the body are only local in their action; they are not in themselves of grave consequence and do not lead to permanent disability and are seldom severe enough to necessitate absence from work. With the recognition of the hazard, prevention and treatment should be easy.

Wisconsin Medical Journal, Madison

30 158 (Jan) 1931

- Misakes in General Practice H V Foshion Algoma—p 1
Deaf Child R L Bower, Kansas City Mo—p 5
Erastus Bradley Wolcott (1804-1880) W S Miller Madison—p 8
Professional Independence H P Greeley Madison—p 12
Urological Roentgenology Aid in General Practice W E Bannen La Crosse—p 14
Intestinal Obstruction Due to Gallstones A F Marshall P L Heitmeyer and M E Swanton Appleton—p 18
Fatty Embolism Following Fractures R G Wheelihan Milwaukee—p 19

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Lancet, London

1 171 224 (Jan 24) 1931

- *Technic and Results of Myomectomy V Bonney—p 171
*Etiology of Peptic Ulcer L O Shughnessy—p 177
*Irradiation of School Children L Hill and A R Laurie—p 182
Melanoma Following Crab Yaws C C Chesterman—p 183

Technic and Results of Myomectomy—Bonney states that, although cases of fibroids beyond the scope of conservative surgery are uncommon, this must not be interpreted to mean that myomectomy is the operation of choice in the majority of patients suffering from these tumors. Myomectomy varies immensely in magnitude in different cases, being sometimes much easier than the corresponding hysterectomy, and sometimes much more difficult. For women over 41 years of age it is to be preferred to hysterectomy only when it is obviously the lesser operation of the two, or when the patient for reasons of her own wishes it. For women of 41 and under it should, broadly speaking, be the operation of choice, but there are exceptions. The patient may desire the removal of the uterus either to free herself from the possibility of conception or to escape the monthly annoyance or pain of the periods or she may present such extreme anemia as to render continuance of the menses undesirable. Myomectomy should not be performed unless the uterus, apart from its contained fibroids, is reasonably healthy, nor ever unless the surgeon feels sure that the fibroids themselves present no suspicion of being malignant. The various forms of nonmalignant degeneration—"red" myomatoid, hyaline, cystic, nevoid—do not in the least contraindicate conservatism, and this is especially noteworthy of "red" degeneration, with which pyrexia is so often associated. The author has with impunity enucleated such fibroids on many occasions.

Etiology of Peptic Ulcer—O'Shaughnessy describes experiments on cats which show that it was possible to produce the various stages of acute ulcer by injections of histamine into the muscular layer of the stomach wall. One ulcer having the appearance of a chronic ulcer was noted. Histamine is a product of protein disintegration and is produced by dead bacteria as well as by dead tissue, it seems to be a factor common to all the multitudinous methods that have been employed to produce ulcer experimentally and to the various processes that have been supposed to produce it clinically, it is a factor that links the simple injection of serum used by Bolton with the grossly mutilating surgical experiments of Mann, it is present in the cultures of streptococci employed by Rosenow, it is absorbed from the burnt surface of the skin, it is present in the various septic foci whose removal occupies so prominent a place in the present day therapy of the disease.

Irradiation of School Children—Hill and Laurie present the results of a controlled investigation of the effects of irradiation of school children. Four areas of the town of Derby were selected—roughly North, South, East and West—and a random sample of 100 children were taken from each area. Four groups were formed, each group consisting of twenty-five children from each area, so that all groups were comparable as regards living conditions. The ages were between 9 and 12 years, and, as the groups were formed by random sampling, any effect of age was minimized. The test extended over sixteen weeks. The children in group 1 were given radiation 6 feet away from a long flame tungsten cored carbon arc twice weekly. The lamp ran on 85 volts and 15 amperes and the maximum dose was ten minutes back and ten minutes front 6 feet away and this given twice a week. The children in group 2 were given one viosterol pellet at school daily. Each pellet has a dosage of vitamin D equivalent to that in about 2 ounces of cod liver oil. The children in group 3 were given exactly similar looking pellets but containing no viosterol daily and attended, also for exposure to an arc fitted with a glass screen twice a week. This group was put in to demonstrate the part if any, that psychology plays in the taking of pellets and the mere fact of undressing before a lamp. The children in group 4 were controls, who had nothing done for them at

all. It was noted that 1. Marked improvements under any particular heading or class of headings, were always shown in groups 1 and 2, and not by a small margin that could be due to fortuitous circumstances, but by a really appreciable margin. 2. In no case did groups 3 and 4 show better results than 1 and 2. 3. Group 1 always showed slightly better results than group 2. 4. In no case, in groups 1 and 2, was there any retrogression in the health of the children, except in the single instance of enlarged cervical lymph nodes, for which there was an underlying cause, untreated except by irradiation. 5. The cases that showed really spectacular improvements were in group 1.

Medical Journal of Australia, Sydney

1 67 98 (Jan 17) 1931

- Pathology of Metropathia Hemorrhagica One Hundred and Twelve Cases of Irregular Uterine Hemorrhage J V Duhig—p 67
*Early Diagnosis and Serum Treatment of Poliomyelitis K T Helms—p 71
Clinical Types of Infantile Paralysis E H M Stephen—p 75
Carcinoma of Esophagus with Multiple Metastases D B Rosenthal—p 79
Tumor of Semilunar (Gasserian) Ganglion Neurocytoma P E W Smith—p 80
Syphilis of Stomach Simulating Carcinoma G Bell and A H Tebbutt—p 81
Gastric Intussusception in Adult Due to Rare Tumor S G Icceton H R G Poate and A H Tebbutt—p 82

1 99 124 (Jan 24) 1931

- Diagnosis of Pregnancy J K Couch—p 99
Diagnosis of Whooping Cough L Meagher—p 103
Mental Hygiene of Childhood M V Gutteridge—p 107
Child Hygiene C Ellis—p 109
Tuberculous Pyelo-Ureteritis of Right Kidney M G Sutton—p 111
Juvenile Paretic Neurosyphilis G L Ewan—p 112
Intradural Resection of Posterior Primary Divisions for Intractable Sciatic Pain R V Graham—p 112

Diagnosis and Serum Treatment of Poliomyelitis—Helms reports that there have been few cases of poliomyelitis in Sydney during the last nine months. Five patients, all of whom already had paralysis, have been given convalescent serum. In two of these there was no further paralysis, and the rate of recovery has been satisfactory. The serum may or may not have had a beneficial effect in these instances. A third patient had bulbar paralysis at the time of administration. Paralysis spread to the intercostal muscles and the child died thirty-six hours later. A fourth patient had extensive paralysis of the four limbs and trunk. He died two weeks later from pneumonia. The case is interesting in view of the fact that there was no increase in the cell content of the cerebrospinal fluid thirty-six hours after the appearance of paralysis showing that meningitis was at a minimum, although there must have been considerable involvement of the anterior horn cells.

Presse Medicale, Paris

38 1713 1744 (Dec 17) 1930

- Villous Tumors of Rectum R Bensade A Cain and A Imbiling—p 1713
Calcification of Tuberculous Lesions Under Influence of Viosterol C Levaditi and Li Yuan Po—p 1720
*Method of Roentgen Examination of Blood Vessels During Life by Injecting Emulsion of Iodized Poppy Seed Oil M Saito K Kama Kawa and H Yanagizawa—p 1725
Histology of Neurocric Phenomena J Berger—p 1729
Alveolar Lesions of Experimental Granuloma M Macagnac and I Nicoud—p 1732
Experimental Daltonism J I Pech—p 1736
Biliary Prolithiasis A Bergeret and J Dumont—p 1737
Case of Cirrhotic Aneurysm of Finger J Quennu—p 1740
Hypertrophic Steatosis of Liver in Murlings R Delre and G Sennehaige—p 1742

Roentgen Examination of Blood Vessels by Injecting Iodized Poppy-Seed Oil—Saito et al. describe a method of arteriography and venography that consists of injecting, into the vessels an extremely fine emulsion of iodized poppy seed oil or of iodized sesame oil. They have used this method successfully in numerous cases. They give in detail the composition of the different emulsions that they have tried. The injection is made with a large needle and as rapidly as possible so that the emulsion is not diluted by the blood in the vessels. In case of arteriosclerosis puncture of the principal arteries is not possible and the emulsion is injected into one of the branches of the arteries. To make a venography the portion of the body to

be examined is ligated with two bands of caoutchouc and the emulsion is injected into a vein between the two ligatures. These injections do not cause dangerous reactions such as are produced by sodium bromide or sodium iodide because the emulsified oil is absorbed into the tissues in the same way as the oil or fats contained in chyle when it enters the blood vessels. The iodine is eliminated gradually in the urine. The injections themselves are not painful, although the patient may notice a slightly abnormal sensation in the veins and arteries. As a result of the harmlessness of the method and of its extreme efficacy, the authors have been able to secure arteriographs of the brain during life, local roentgen examination of cerebral tumors, diagnosis of arterial thrombosis in patients with gangrene, examination of the modifications of the blood vessels after amputation of limbs, examination of varicose veins and so on.

Policlinico, Rome

37 1809 1844 (Dec 15) 1930 Practical Section

*Constitution and Heredity in Pathogenesis of Gastroduodenal Ulcer
E. Jacarelli—p. 1809

Constitution and Heredity in Pathogenesis of Gastroduodenal Ulcer—Jacarelli, after recalling the recent researches on the importance of constitution and heredity in the pathogenesis of gastroduodenal ulcer, reports his own observations on a family of thirteen members, ten of whom presented unquestionable signs of organic gastroduodenal lesions, almost all of an ulcerous type. The pathogenic importance of the constitutional and hereditary factors as demonstrated by statistical studies, is probably associated with the transmission of a special sensitiveness of the gastroduodenal mucosa resulting from congenital or acquired disturbances of the sympathetic nervous system, with frequent preponderance of the vagal section (vagotonia), on the mucosa thus predisposed may act secondarily various contingent factors, causing the formation of a round ulcer.

Archiv für Verdauungs-Krankheiten, Berlin

48 301 442 (Dec.) 1930

*Intestinal Disturbances of Hypophyseal Origin II Strauss—p. 301
Tests of Functioning of Pancreas B. Goldstein—p. 304

*Disadvantages of Alkali Therapy in Diseases of Stomach J. Mayer—p. 318

Elimination of Alcohol in Gastric Juice Following Its Rectal Administration A. Lukis—p. 332

*Daily Blood Sugar Curve in Diabetes R. Kroner—p. 346

*Influence of High Frequency Current on Secretory and Evacuant Functioning of Stomach A. Kirstner and S. Lurje—p. 366
Cucumber Juice as Test Breakfast T. Osuka—p. 382
Mesenterium Ileocolicum Copmune Pathogenesis and Clinical Significance A. Zeitlin—p. 391

Intestinal Disturbances of Hypophyseal Origin—In a high percentage of the cases of adiposogenital dystrophy that he has observed, Strauss has noted various types of intestinal disturbances. Frequently there was a tendency to diarrhea, which in some cases was accompanied by pain and alternated with obstipation. The cecum was frequently distended, painful on pressure and of abnormal mobility. Similar changes were frequently present in the lower portion of the ascending colon. Roentgen examination was negative in many cases, but in some of them it revealed typhlitis with a low position and abnormal mobility of the cecum. Nearly all the cases occurred in middle-aged men with definite signs of adiposogenital dystrophy.

Disadvantages of Alkali Therapy in Diseases of Stomach—Mayer believes that in hyperacidic alkali therapy is of only problematic value. A complete neutralization of the excess hydrochloric acid is of extreme rarity. Moreover, in this condition the administration of alkalis is followed by an increased secretion of hydrochloric acid, thus the effect is the opposite of what is desired. The effect on the subjective disturbances is only transitory. The prolonged administration of alkalis in hyperchlorhydria, however, may lead to a disturbance in the functioning of the stomach which may terminate in true achylia gastrica. The use of alkali therapy as extensively as it has been practiced during the last few years in the clinic and in general practice is therefore unjustified. A more conservative attitude should be taken with regard to this form of treatment particularly in the use of large doses of alkalis.

Daily Blood Sugar Curve in Diabetes—Kroner states that occasionally in diabetes three determinations of the blood

sugar should be made in one day, namely, in the morning before the first meal, at noon shortly before the midday meal and in the evening before the last large meal. When the results of the determinations are plotted the curves are of significance with regard to the treatment. If the curve shows a midday drop in diabetic persons under insulin treatment it indicates that a sufficient amount of insulin is being given. If, on the other hand, the curve shows a midday peak it indicates that the amount of insulin being given should be increased.

Influence of High Frequency Current on Stomach—According to Kirstner and Lurje, in cases of normal gastric secretion and hypersecretion diathermic treatment causes a decrease in the secretory functioning of the stomach. In cases of hyposecretion it does not have an appreciable influence on the secretion. In all types of secretion the evacuation of the stomach is accelerated, the acceleration is particularly marked in cases in which the evacuation is slow before the diathermic treatment is given. Under the influence of diathermy, various gastric disturbances disappear rapidly. The influence of diathermy depends not only on the heat action but also on the specific action of the high frequency current (electrical effect). Of great importance with regard to the curative effect of diathermy in disturbances in the secretory and evacuant functioning of the stomach is the correct application of the electrodes.

Zeitschrift für Tuberkulose, Leipzig

59 97 224 (Dec.) 1930

Effect of Sodium Chloride-Free Diet on Tuberculous Processes A.

Herrmannsdorfer—p. 97

Open Pulmonary Tuberculosis Lethality Morbidity and Duration of

Infection II Braconing—p. 109

*Tuberculosis of Bones and Joints in Its Relation to Tuberculosis of

Lungs R. Schaafhausen—p. 111

Histogenesis of Tuberculous Processes W. Pagel—p. 124

Idem P. Huebschmann—p. 128

Primary Tuberculous Lesion with Atypical Histologic Structure M.

Pinzer—p. 130

Frequent Absence of Fever in Tuberculosis in Children of School Age

K. Nussel—p. 132

Causes of Decrease in Tuberculosis Death Rate of Nursing in Ger-

many J. Weissfeiler—p. 148

Primary Actinomycosis of Lung Case T. Phieninger—p. 152

Use of Tuberculosis Center to Supplement Instruction in Tuberculosis

in Medical School J. E. Kayser Petersen—p. 157

Sedimentation Quotient in Pulmonary Tuberculosis G. Lutz and

W. Wahl—p. 166

Effect of Sodium Chloride-Free Diet on Tuberculosis—Herrmannsdorfer's article consists exclusively of six case histories of tuberculous persons and twenty one plates showing the condition of the patients before and after treatment by a sodium chloride free diet. The conditions treated were varied, namely, one instance of lupus vulgaris of the face and nasal mucosa, one of tuberculous caries of the right tenth eleventh and twelfth ribs with fistula and ulcer formation on the back, bilateral, cirrhotic proliferative pulmonary tuberculosis, cold abscess with fistulas on the left thigh, right forearm and right axilla, one of tuberculous peritonitis with inoculation tuberculosis in a laparotomy scar and exudative pleurisy, one of phlegmonous ulcerative tuberculosis of the soft parts of the fingers, bone tuberculosis of the left wrist and middle portion of the hand, and tuberculosis of the left axilla and subpectoral lymph nodes, one of pulmonary tuberculosis with cavern formation in the right upper lobe, pneumothorax, exudate and empyema necessitatis, and one of lupus ulcerosus of the bridge of the nose, tuberculosis of the rectum with rectovaginal fistula and periproctal tuberculosis. In all the patients except the last one the prolonged use of the sodium chloride-free diet was followed by the healing of the tuberculous processes, and even in the last patient there occurred temporary improvement in the general condition.

Tuberculosis of Bones in Relation to Tuberculosis of Lungs—Schaafhausen reports the results of his study to determine the applicability of Ranke's principle of isolated organ tuberculosis to tuberculosis of the bones and joints. He found that in 100 cases of bone and joint tuberculosis the principle applied 94 times. In 24 per cent of the cases there was only one bone process without any demonstrable lung disease. In 46 per cent of the cases there was merely a primary complex in the lungs. In 24 per cent of the cases there was an extensive healed pulmonary process. In only 6 per cent of the cases did the patients have manifestations of an active pulmonary process.

